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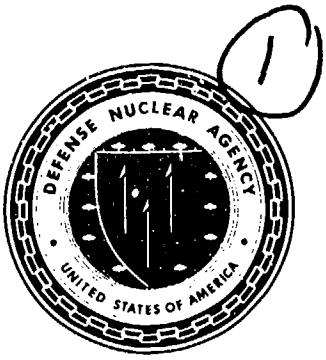

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Nuclear Employment Planning
Volume III—Data Flow Diagrams

Donald W. Doerfler
Lowry A. West
Debora R. Gleason
LB&M Associates
211 SW A Avenue
Lawton, OK 73501-4013

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6. AUTHOR(S)

Donald W. Doerfler, Lowry A. West,
Debora R. Gleason

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

LB&M Associates
211 SW A Avenue
Lawton, OK 73501-4013

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13. ABSTRACT *(Maximum 200 words)*

This report contains four volumes, Main Report (Volume I), Functional Description (Volume II), Data Flow Diagrams (Volume III), and Data Dictionary (Volume IV). The objective of this report is to define user planning requirements for tactical nuclear weapons employment. It identifies the nuclear planning employment functions at corps and division echelons, the interfaces among these functions and the interfaces between these functions and other command and control (C2) functions. It is intended that it be used as the basic requirements document for the automation of the nuclear employment planning process as part of the Army Tactical Command and Control System (ATCCS). The Functional Description (Volume II) of the report provides a menu of functions (processes) which, depending on the phase of nuclear employment must be performed to plan for the use of nuclear weapons at corps and division echelons. The processes have been decomposed to five levels of resolution. The Data Flow Diagrams (Volume III), depict the flow of process inputs and outputs, both among the planning processes themselves, as well as between the nuclear employment planning processes and organizational C2 nodes and entities performing other C2 processes. The Data Dictionary (Volume IV), provides a single place to find the full names and definitions of the data terms used in the Functional Description and Data Flow Diagrams. Mission Thread Diagrams found in Volume I (Main Report) supplement the Data Flow Diagrams in that they show the sequence of processes as they are performed in one phase of nuclear planning. Commander's guidance as it applies to nuclear employment planning is discussed separately in the Main Report and interwoven throughout the data flow diagrams, functional descriptions and the data dictionary. All of these elements make up this report and must be viewed together to get the overall picture of the Operational Nuclear Employment Planning Process.

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SUMMARY

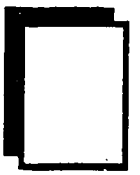
GENERAL.
This is Volume III of a four volume set which describes the Operational Nuclear Employment Planning Process. This volume contains the Data Flow Diagrams discussed in Section 3 of Volume I (Main Report). The Data Flow Diagrams found in this volume are a network representation of the system, portraying it in terms of component pieces and the flow of information within the system. The Data Flow Diagrams show a flow of data within the system and not control of data. This volume along with Volume II (Functional Description) and Volume IV (Data Dictionary) describe the Operational Nuclear Employment Planning Process summarized in Volume I (Main Report).

This volume contains five sections to separate each major level of decomposition. Each divided section represents a complete level of decomposition for that top-level nuclear planning function as defined in this report.

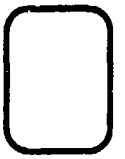
Top Level Functions (1. thru 4.)
Acquire, Maintain, and Transmit Information (1.1 thru 1.3.2.1.2)
Assess Situation (2.1 thru 2.4.3.3)
Determine Concept of Nuclear Employment (3.1 thru 3.4.5.2.3)
Direct Nuclear Employment Operations (4.1 thru 4.4.3.3)

SYMBOLS.
The Data Flow diagrams found in this volume are represented by four basic icons. They are described in the following paragraphs.

External Entity.
The external entity represents either a source of data or the destination of data. It typical represents a person or place that acts as a source of information or a repository of information.

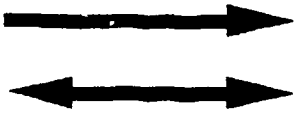


Process.
A process represesnts the transformation of information that occurs inside the system. The process is data transformation agent in that it may change the form of the data, extract data, decompose data or synthesize data.

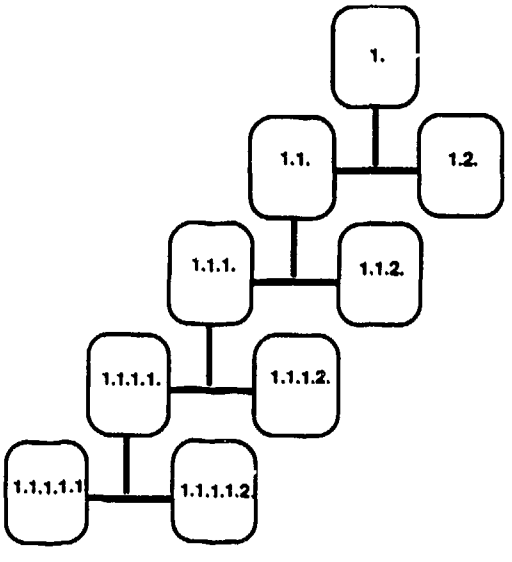


Data Store.
A Data Store represents a location for storage of data which is critical to the system. It may also be thought of as a data base. It is an internal part of the system.

Information Flows.
These represent one-or two-way connections between external entities, stores and processes. The name of the data travelling on this path is usually given on top of the arrow.

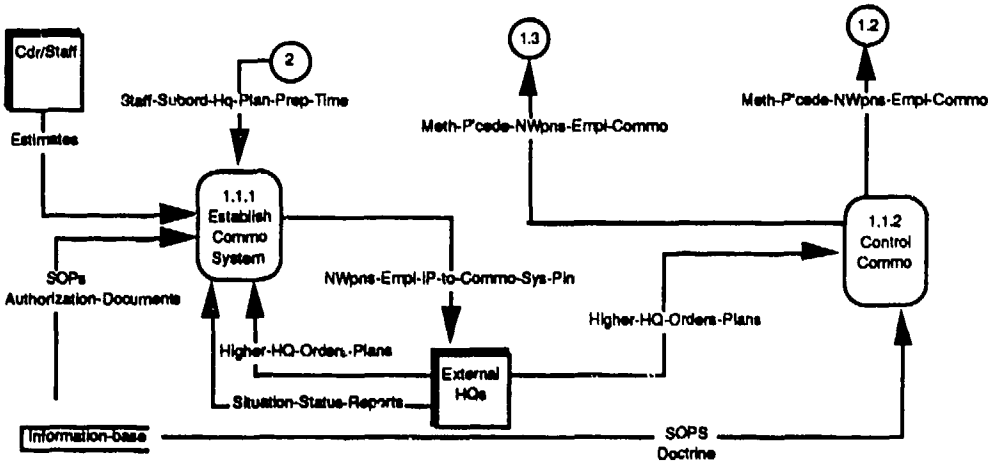


NUMBERING.
Each process is given a number to represent a step in the overall system. In this project, the numbering scheme of each process proceeds from the top level down to, and includes a maximum of five levels of decomposition. An example of the numbering scheme used in these data flow diagrams is shown in the figure below.



EXAMPLE ENTRY.
This volume reflects the hierarchical structure of the data flow for the Operational Nuclear Employment Planning Process. The data flow diagram shown below illustrates two processes (1.1.1 and 1.1.2) which are a part of (1.1). Data enters the system from the Cdr/Staff and External HQs. Data is stored in the system in an

Information Base. Connections can be seen which exist for other parts of the system (process 2 and subprocesses 1.2 and 1.3).



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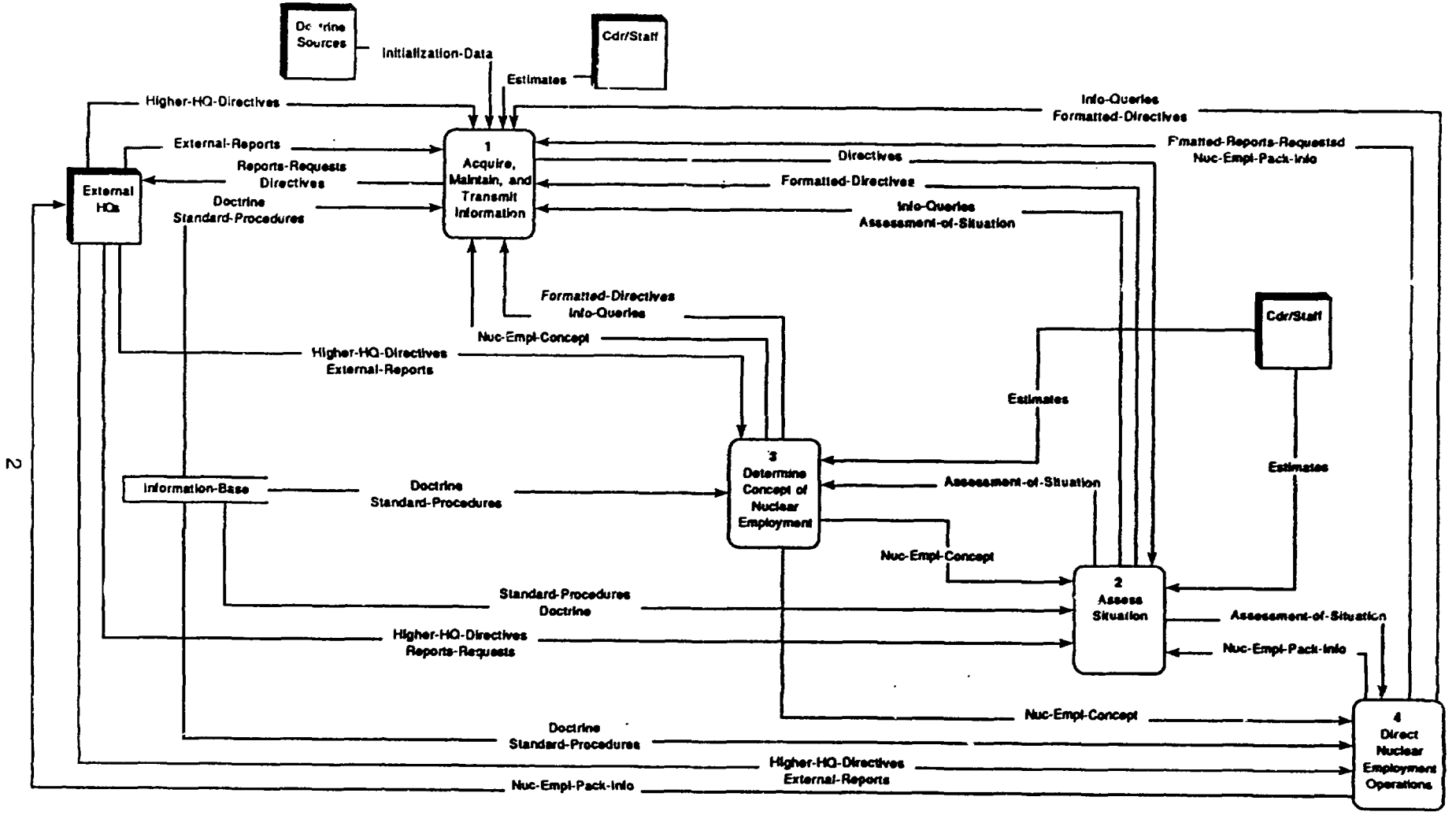
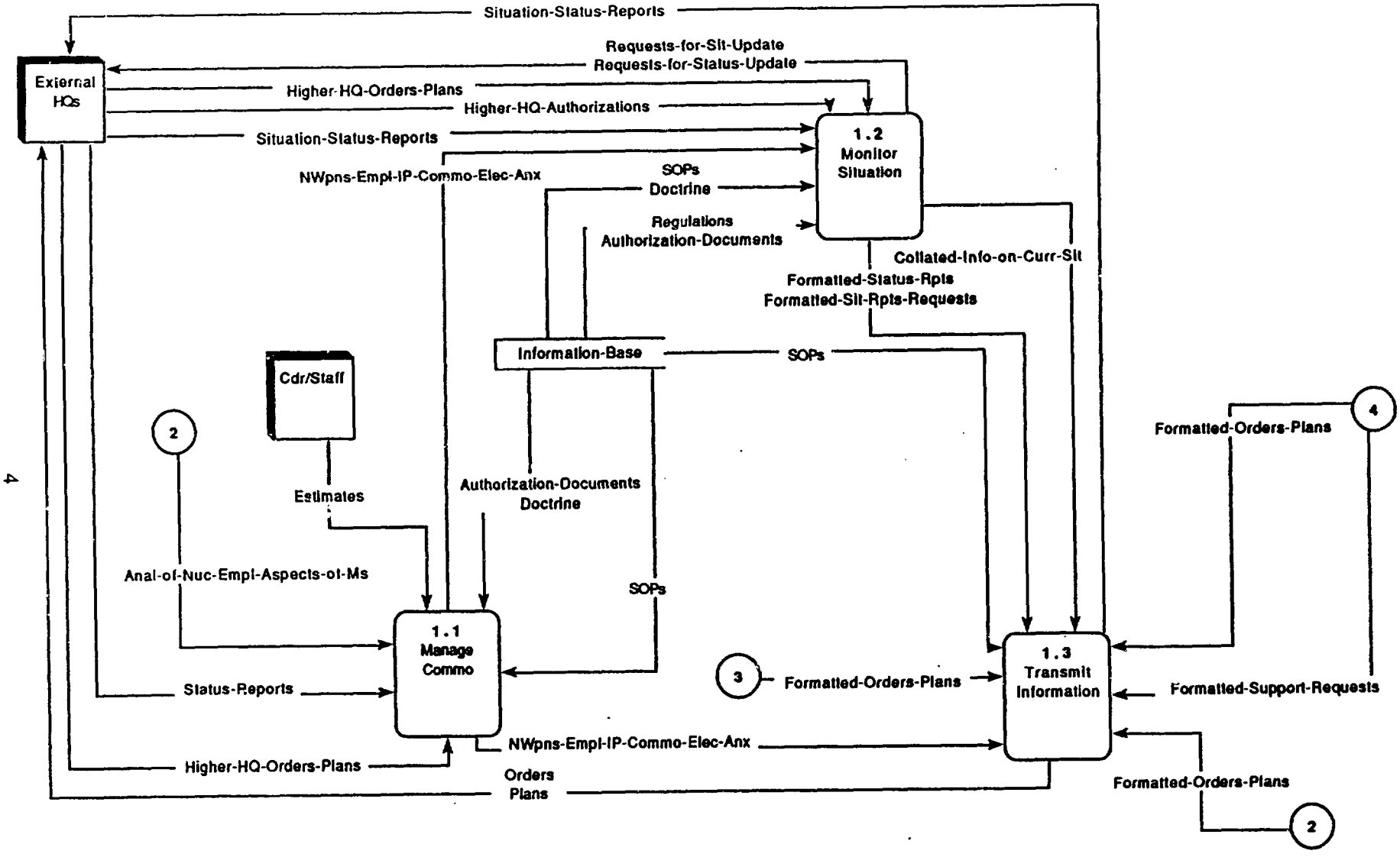
TOP LEVEL FUNCTIONS
(1 THROUGH 4)

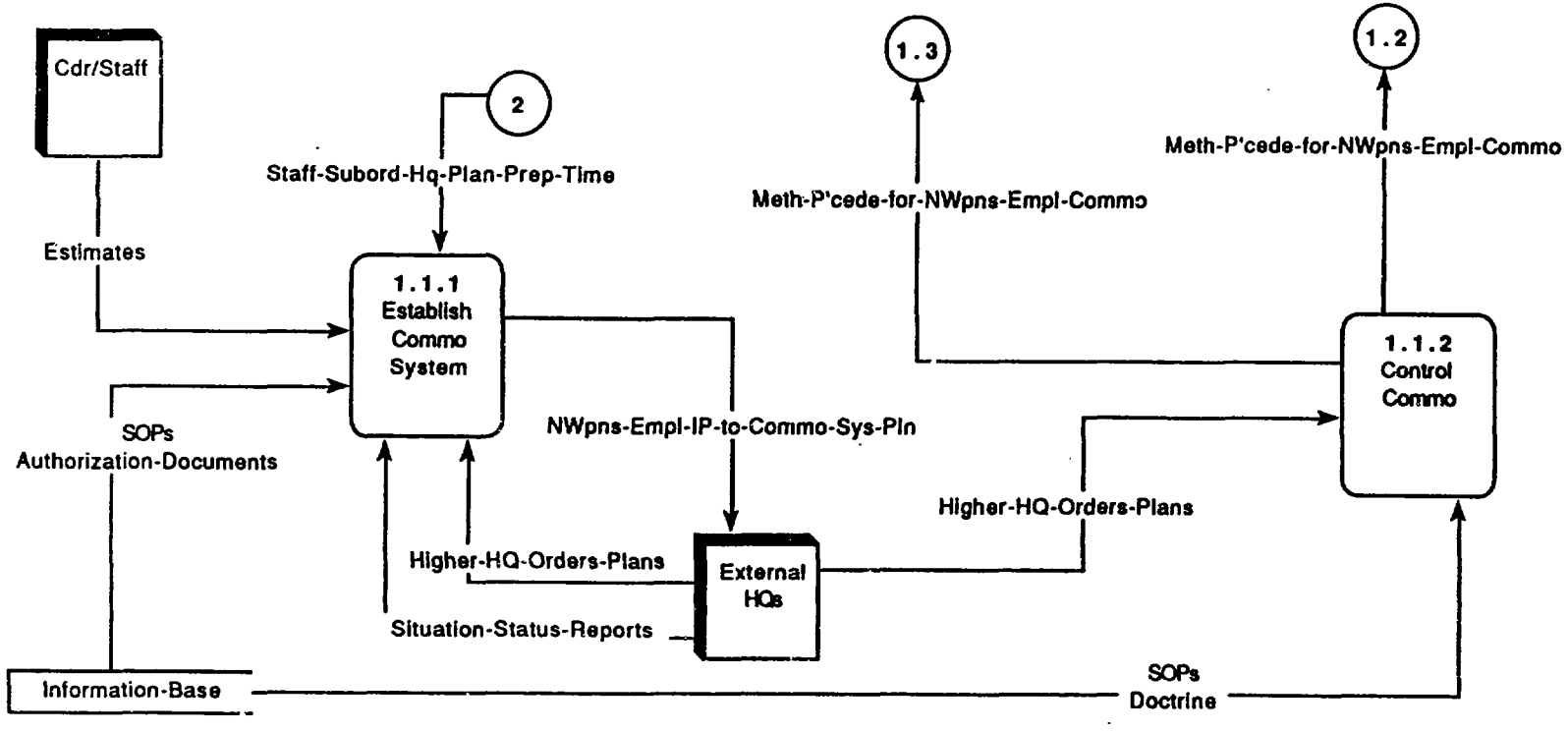


Operational Nuclear Employment Planning #0

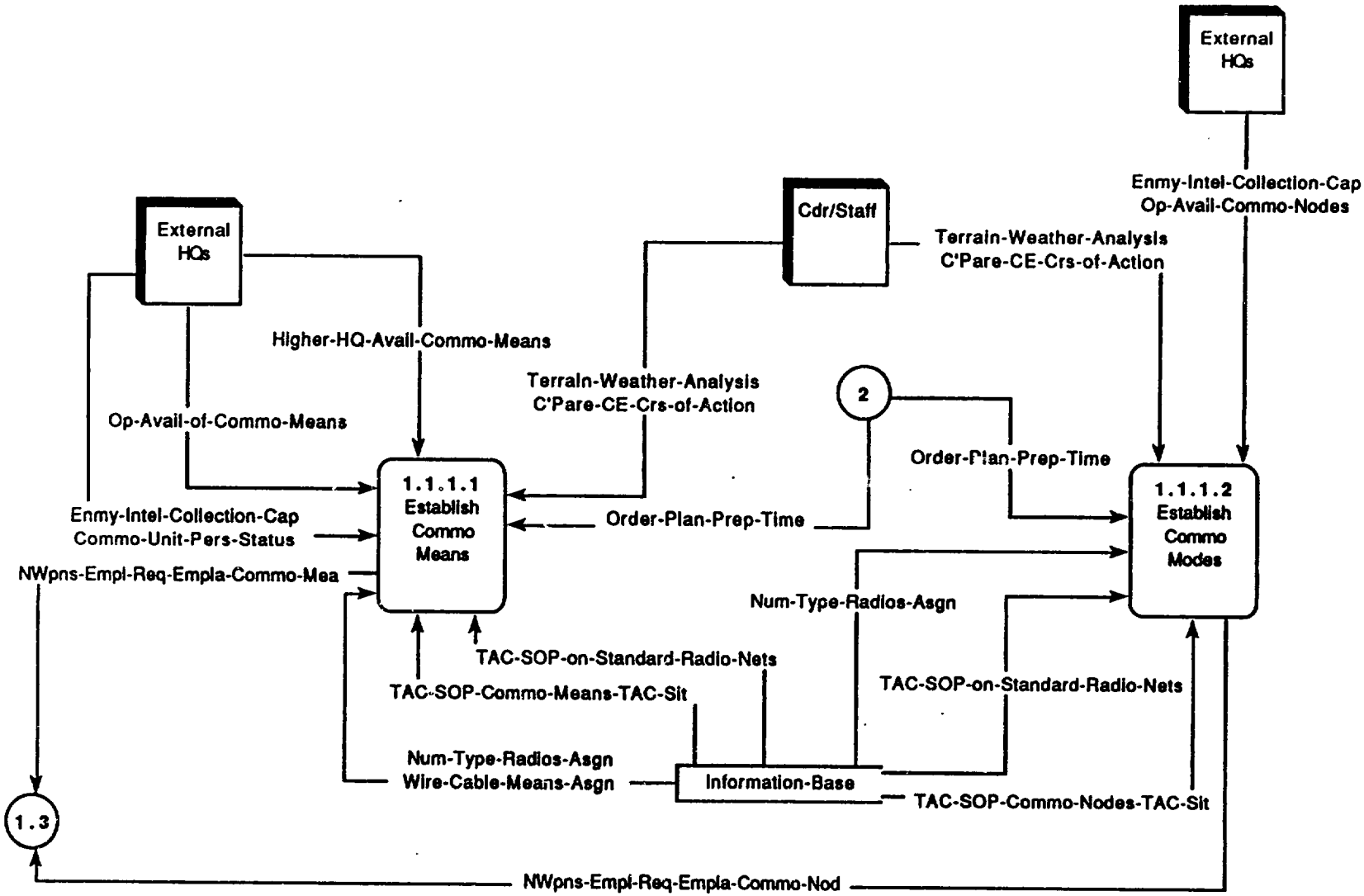
ACQUIRE, MAINTAIN, AND TRANSMIT INFORMATION (1.1 THROUGH 1.3.2.1.2)



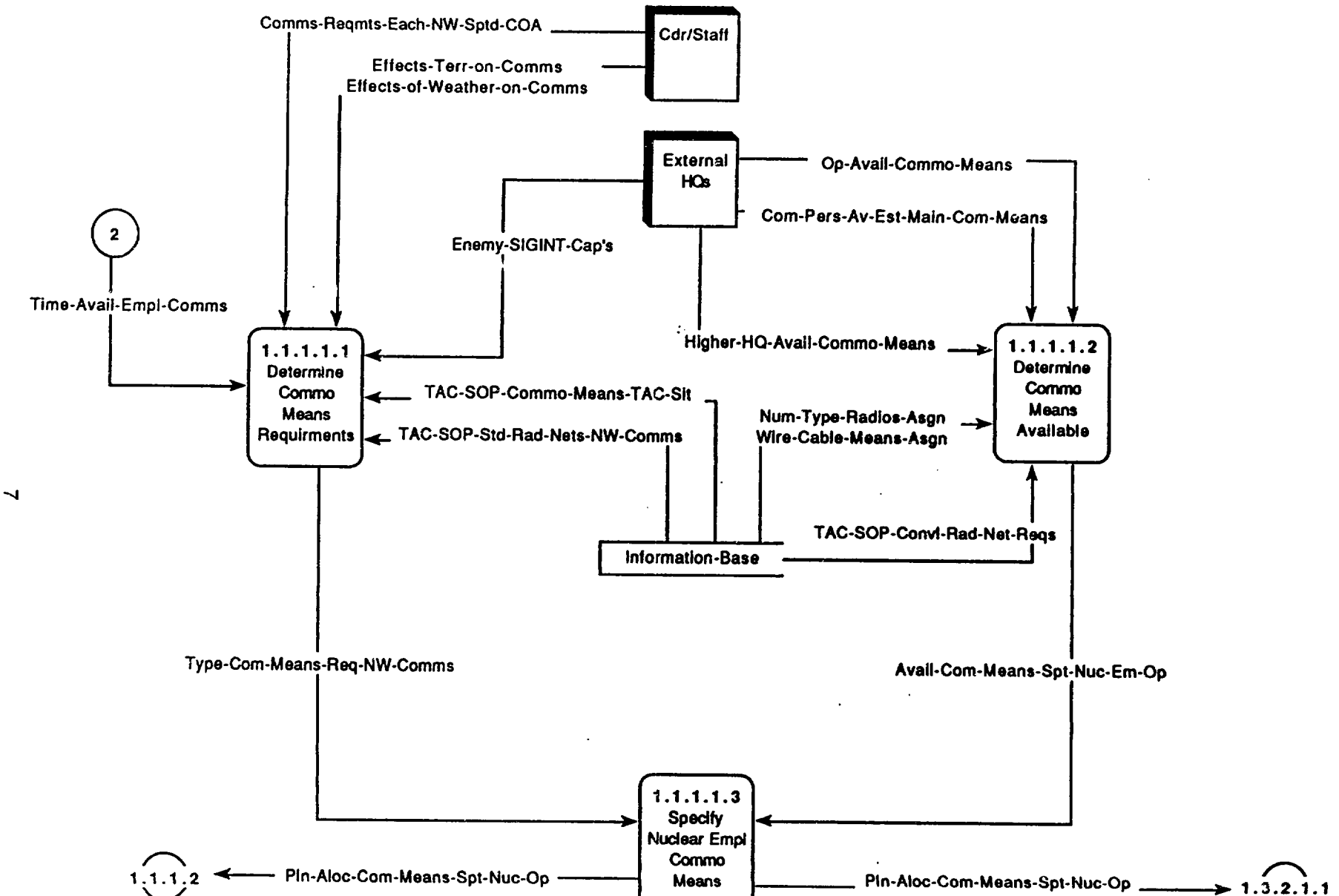
Acquire, Maintain, and Transmit Information #1



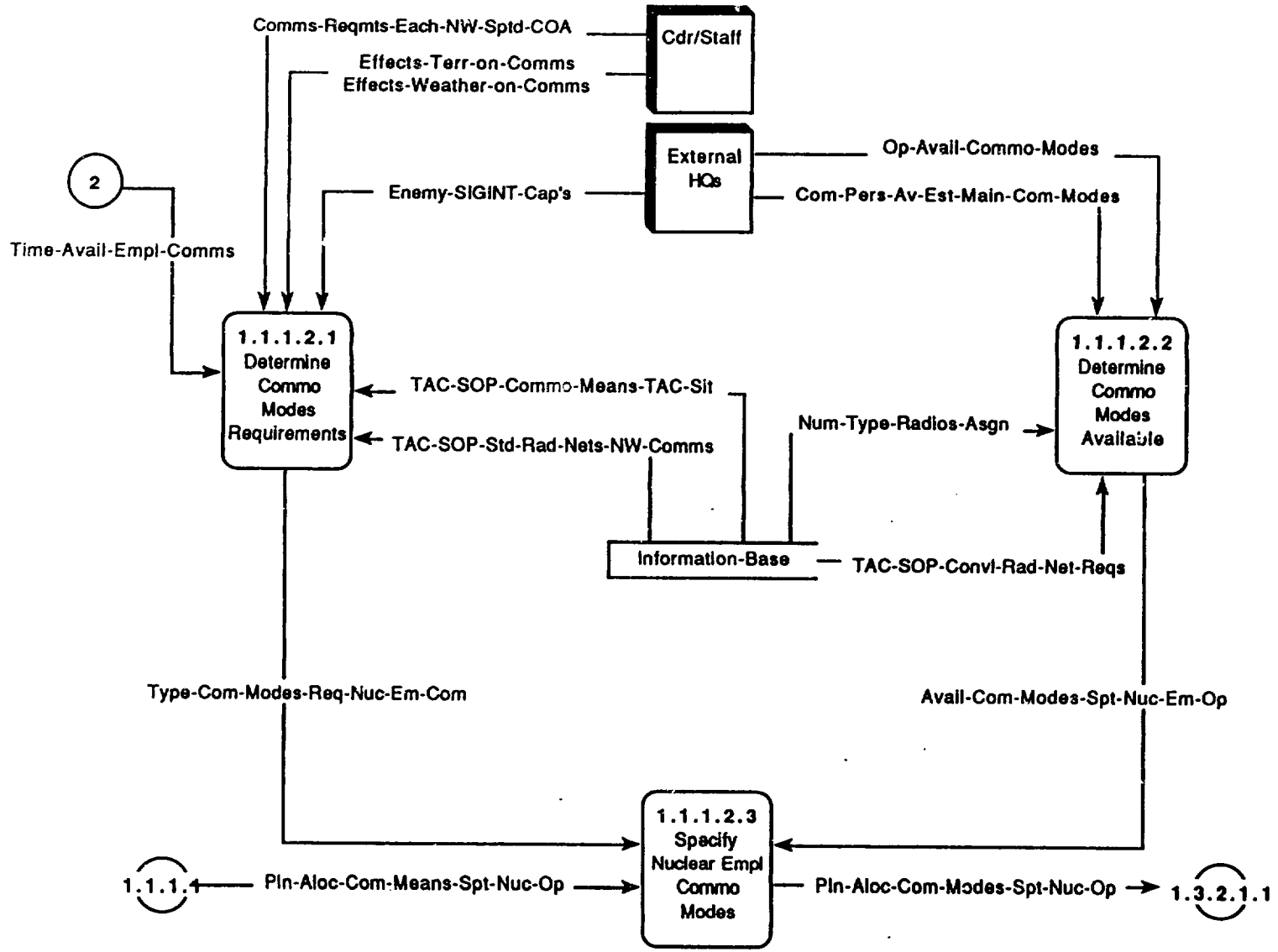
Manage Commo #1.1



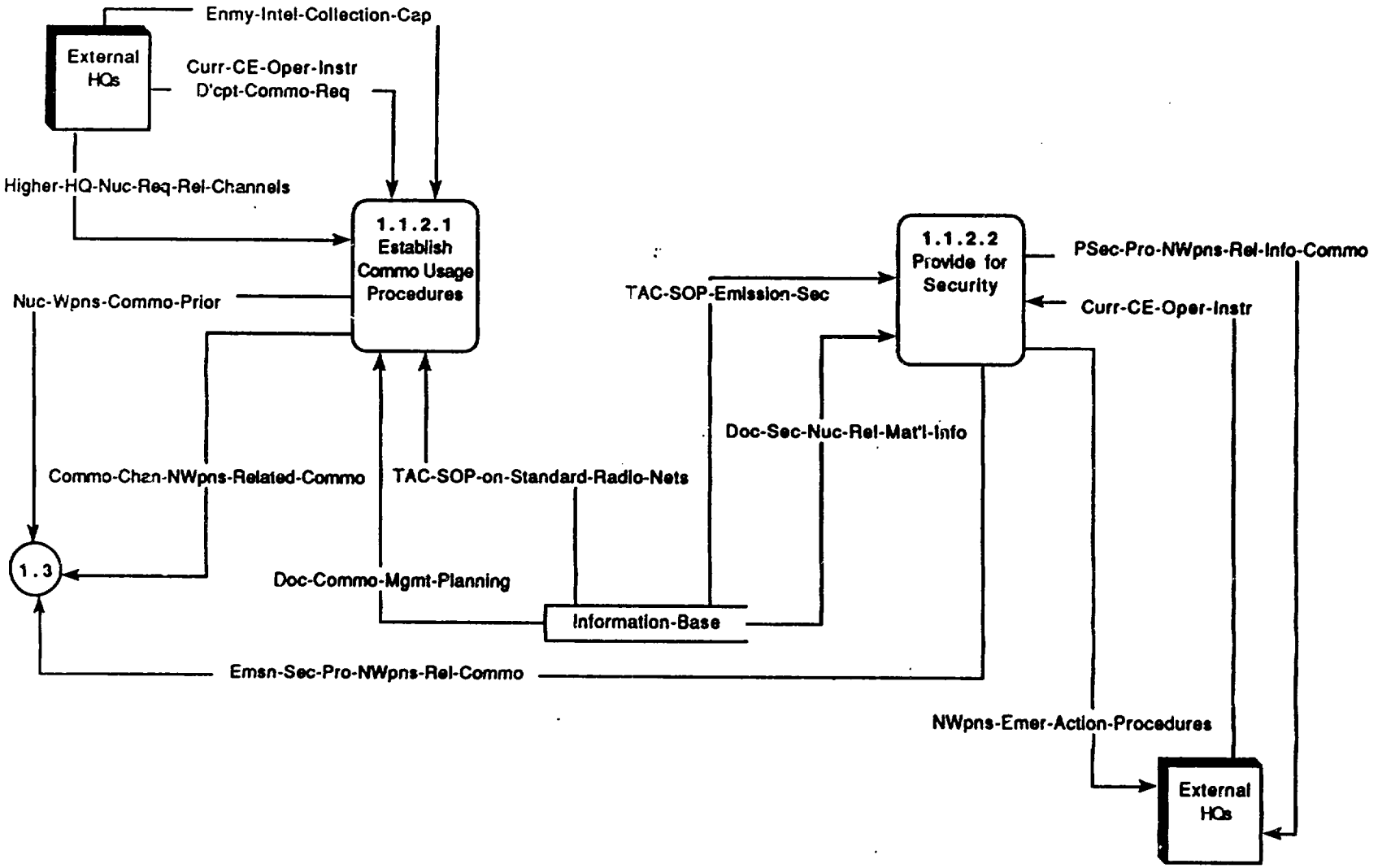
Establish Commo System #1.1.1



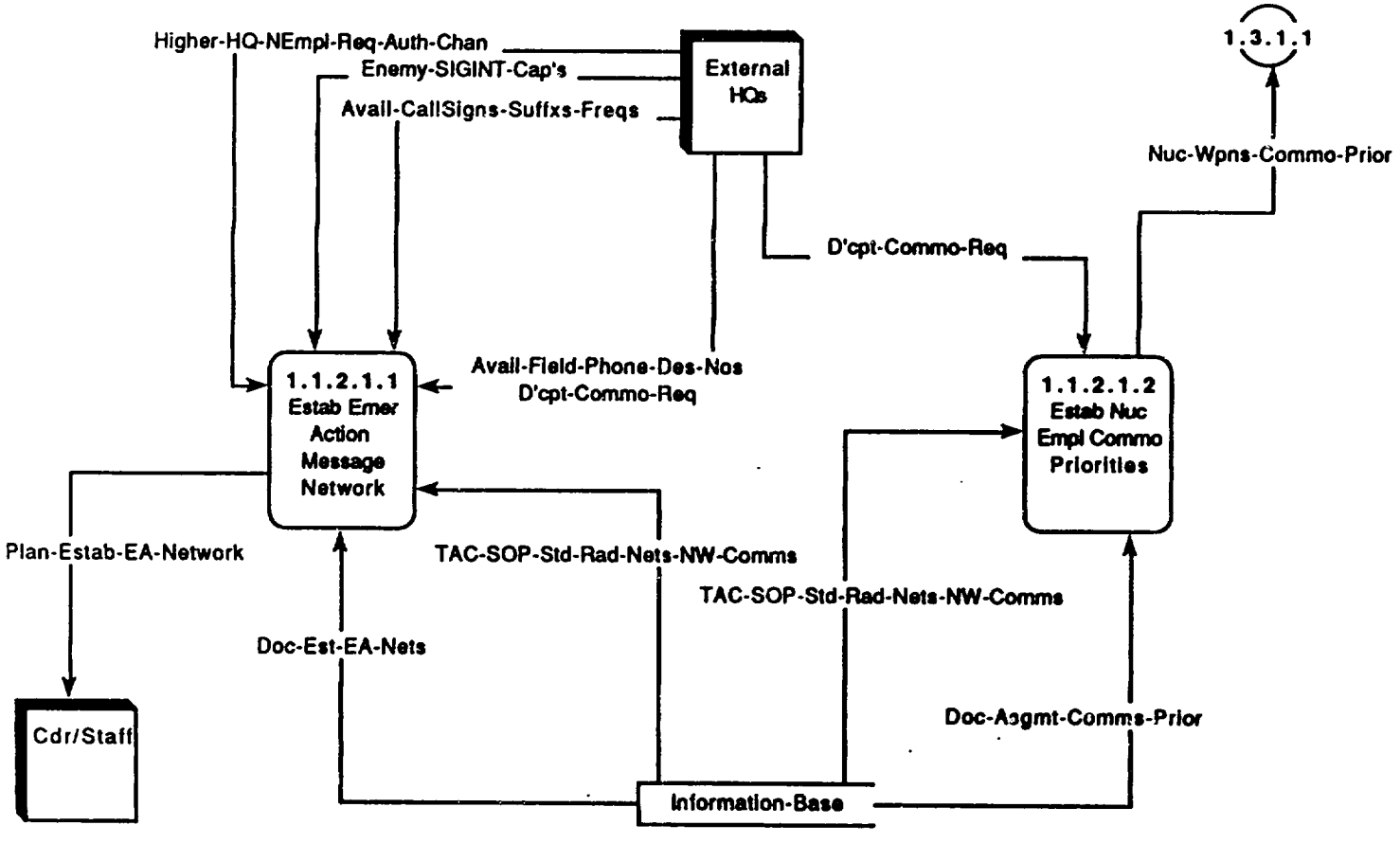
Establish Commo Means #1.1.1.1



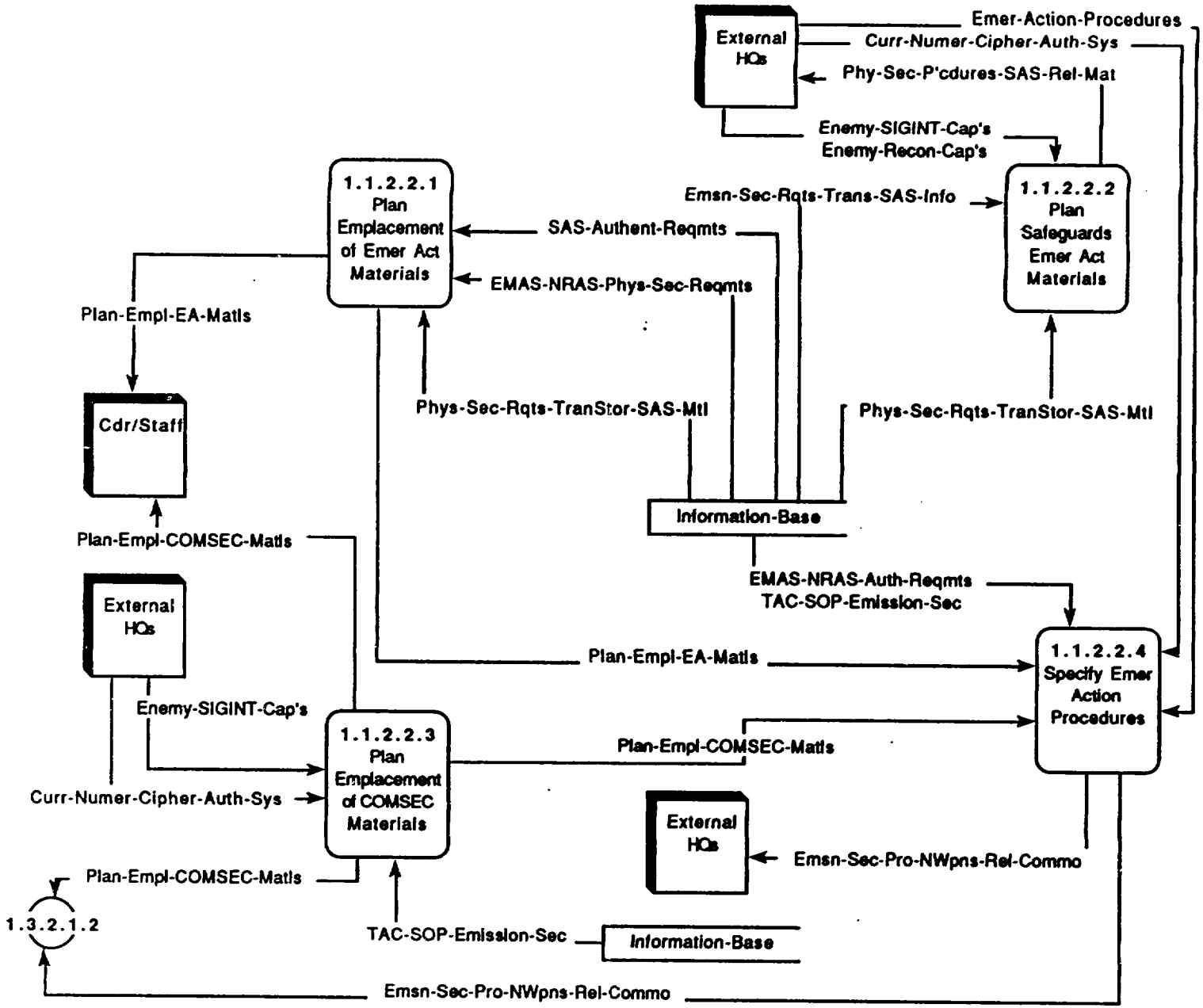
Establish Commo Modes #1.1.1.2



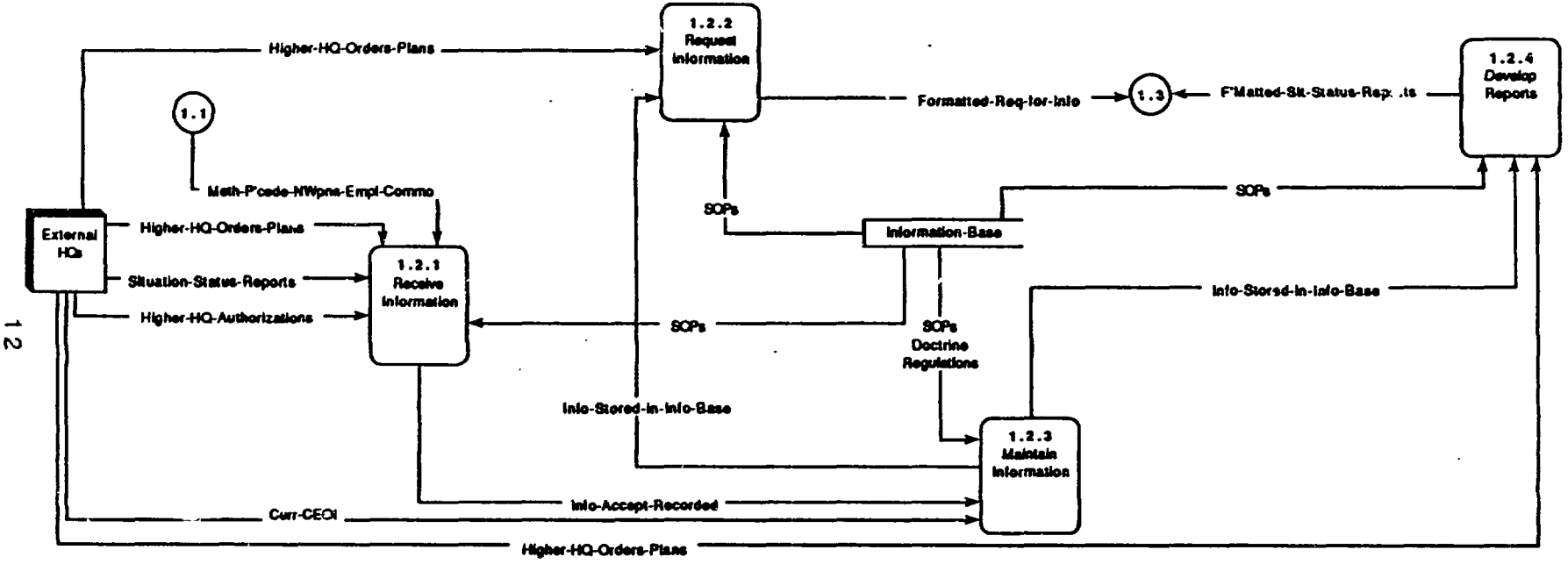
Control Commo #1.1.2



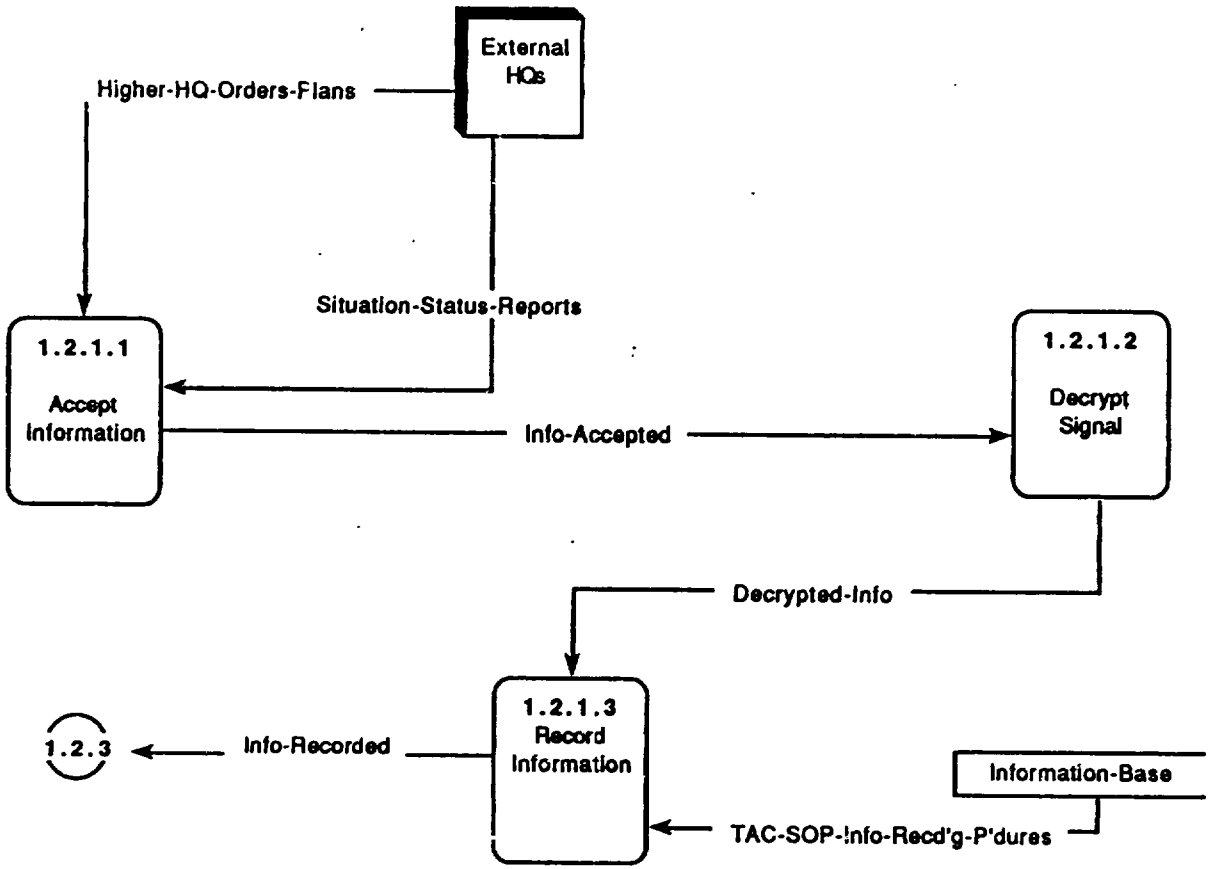
Establish Commo Usage Procedures #1.1.2.1



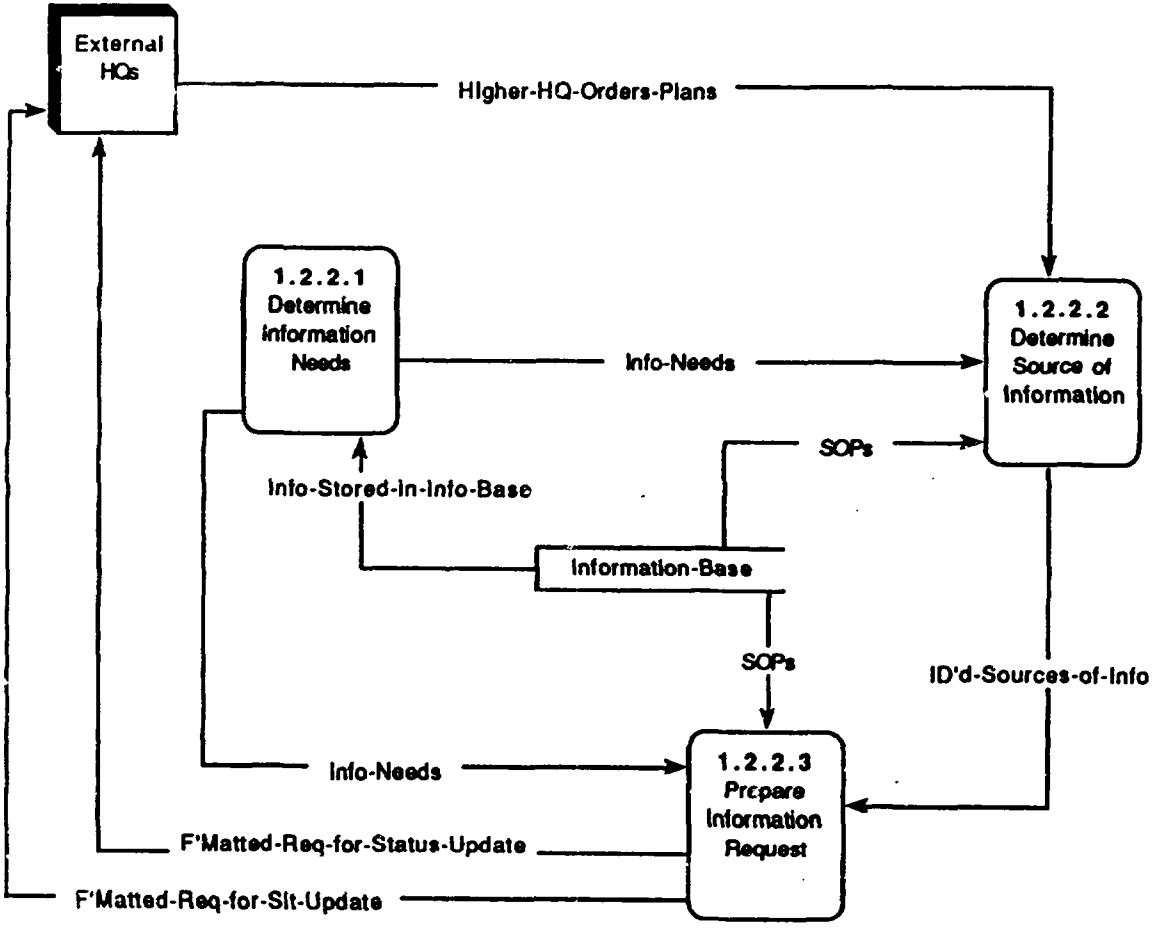
Provide for Security #1.1.2.2



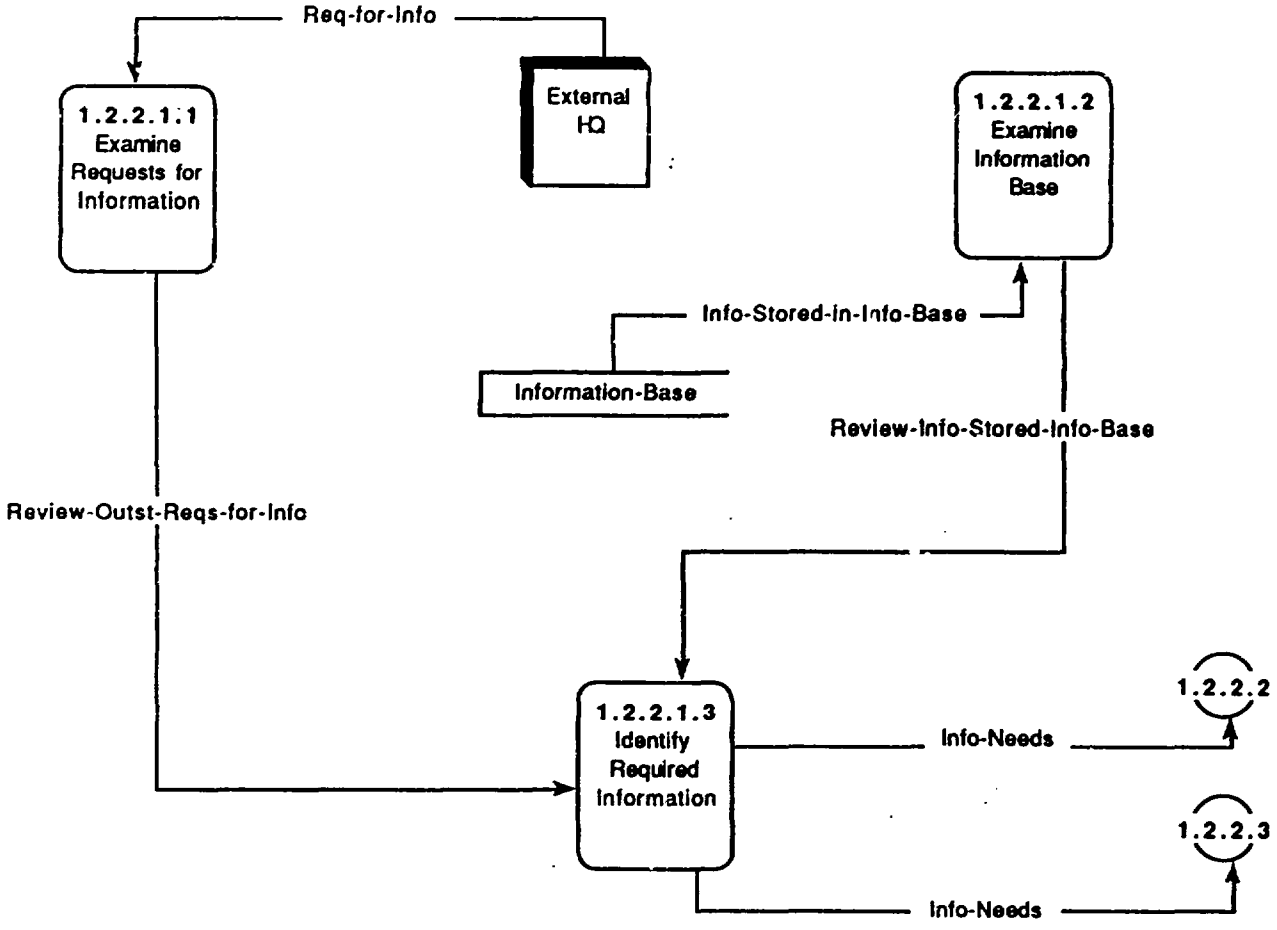
Monitor Situation #1.2



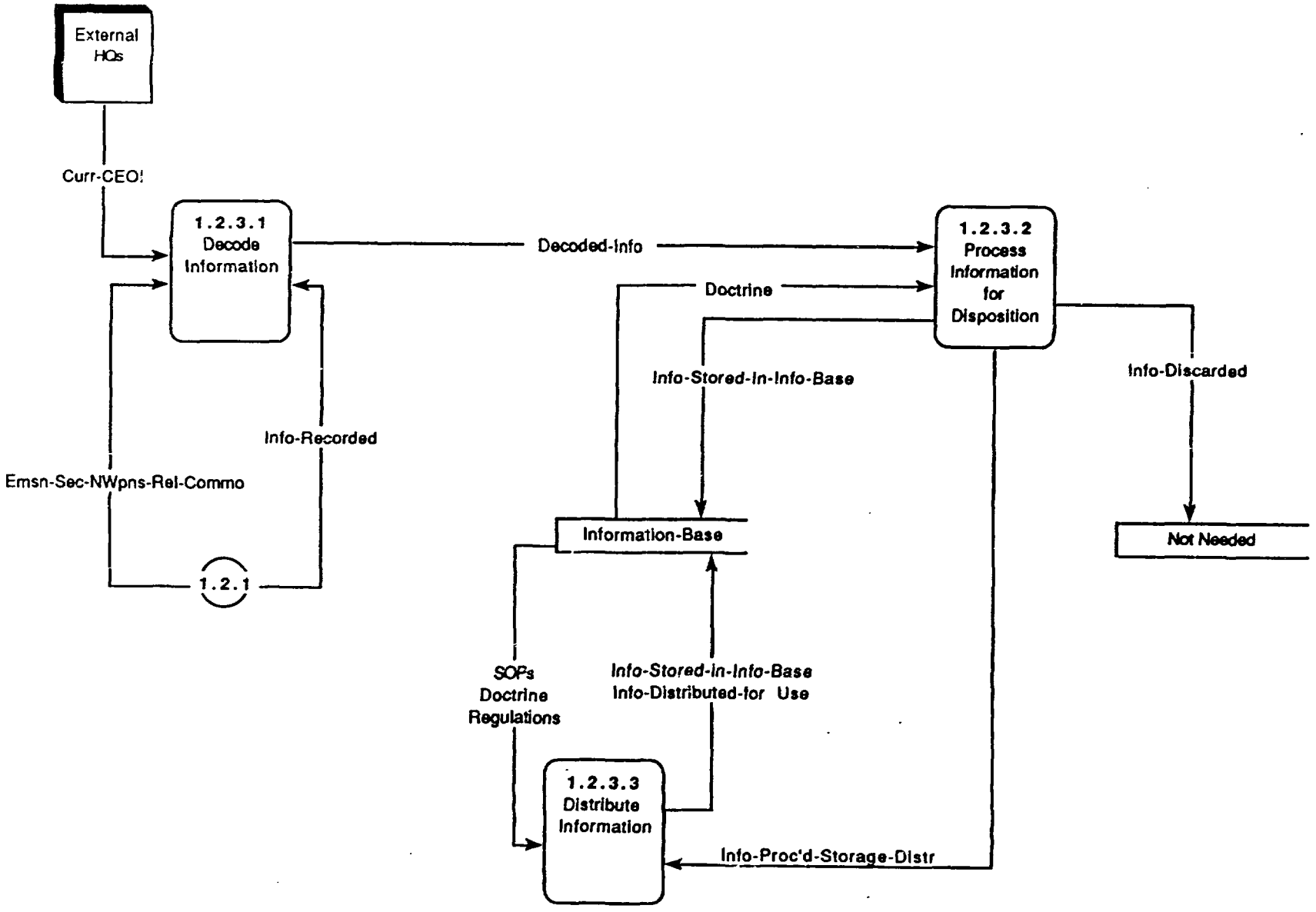
Receive Information #1.2.1



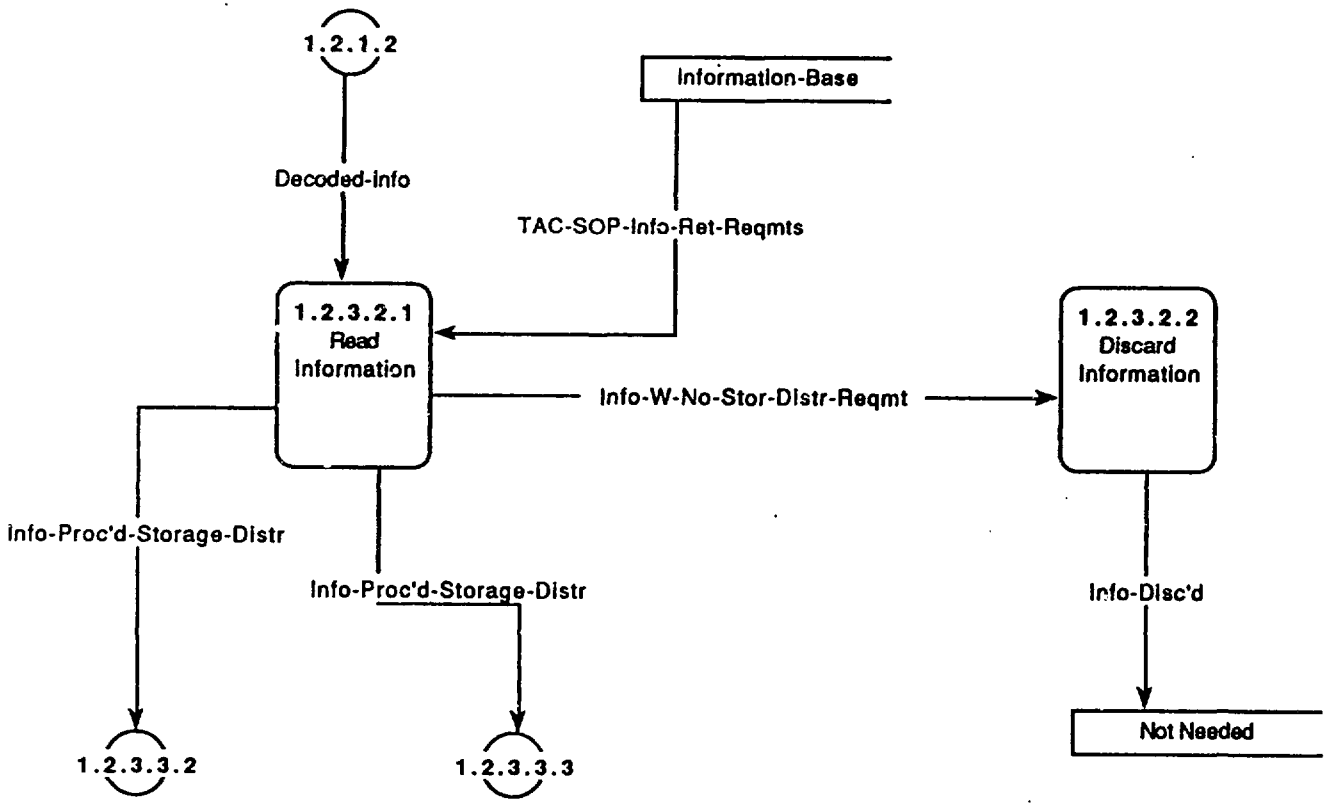
Request Information #1.2.2



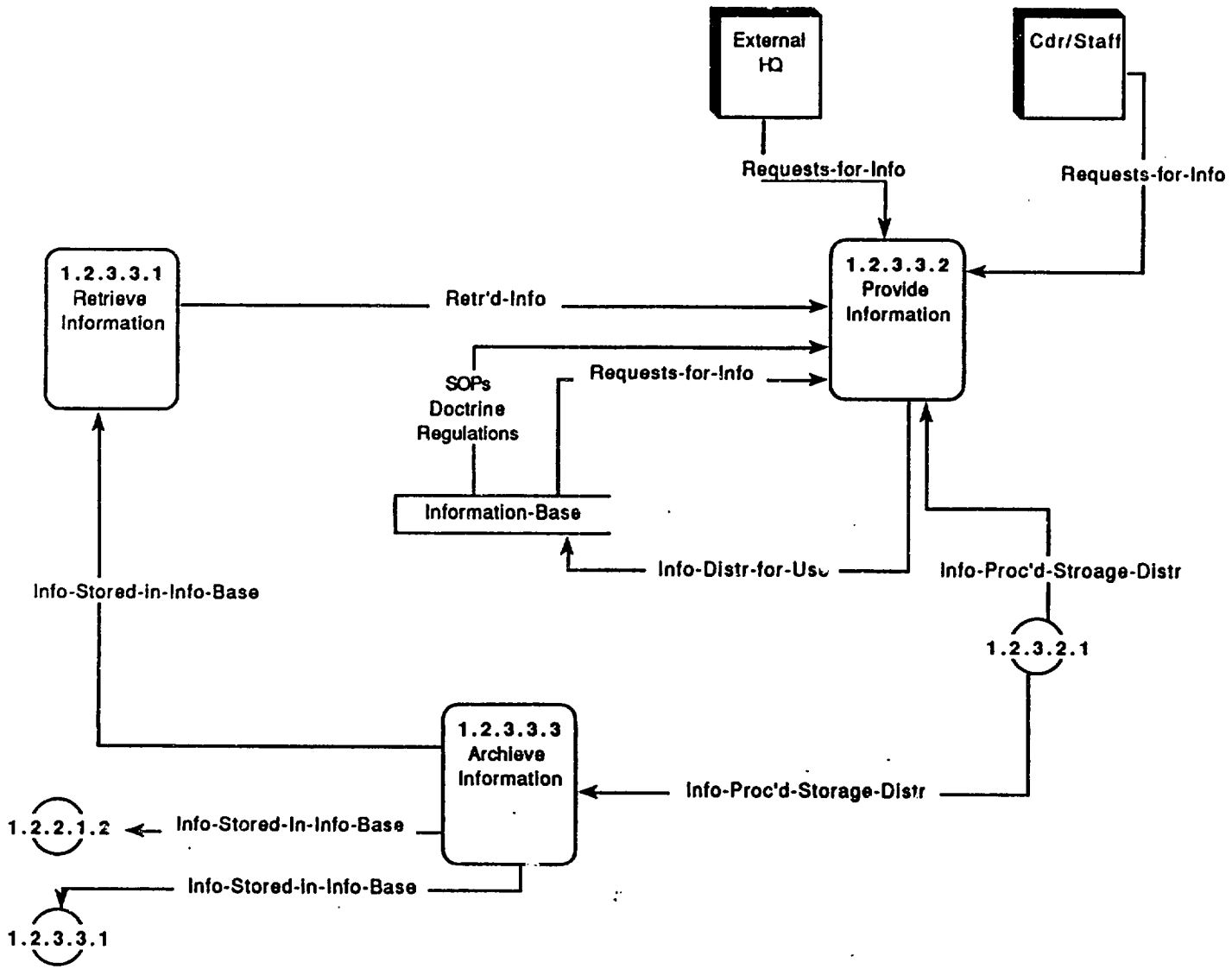
Determine Information Needs #1.2.2.1



Maintain Information #1.2.3



Process Information for Disposition #1.2.3.2



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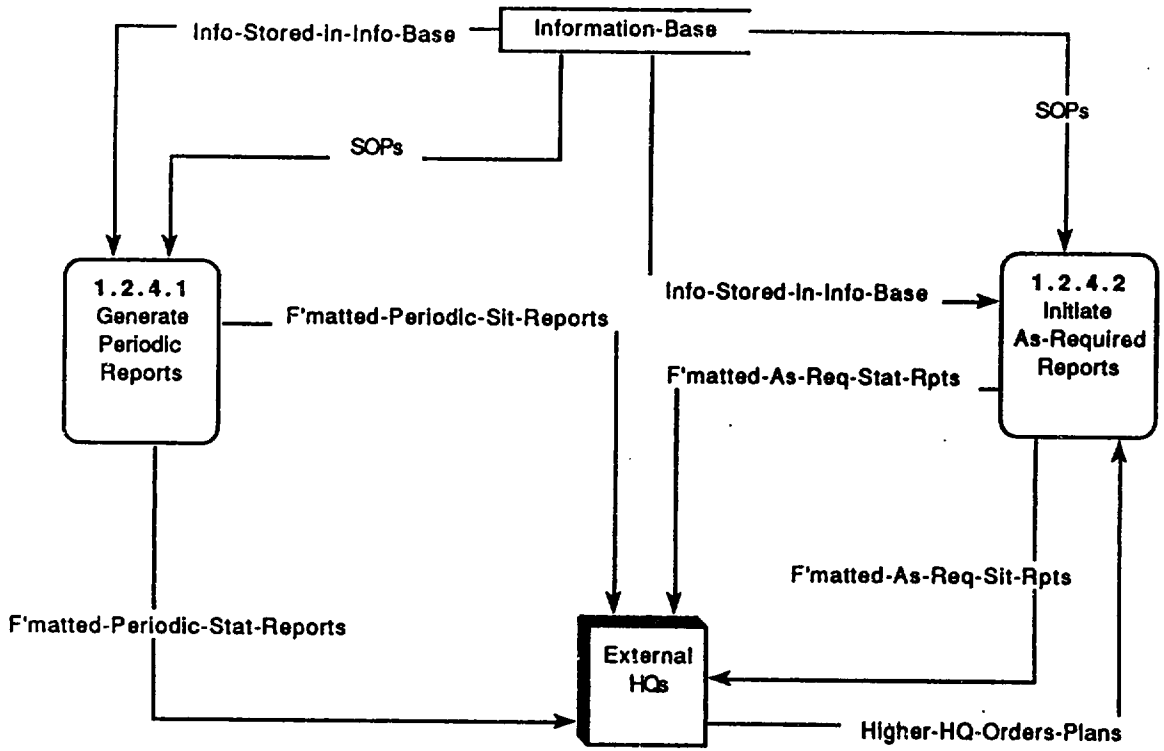

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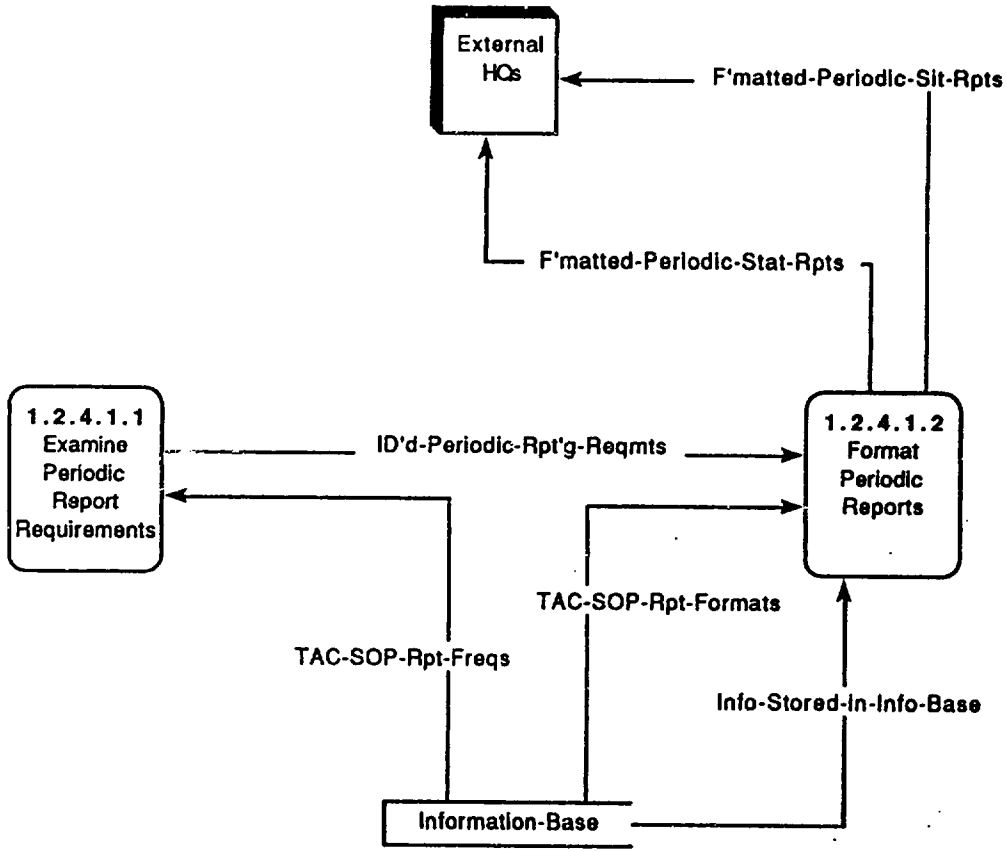
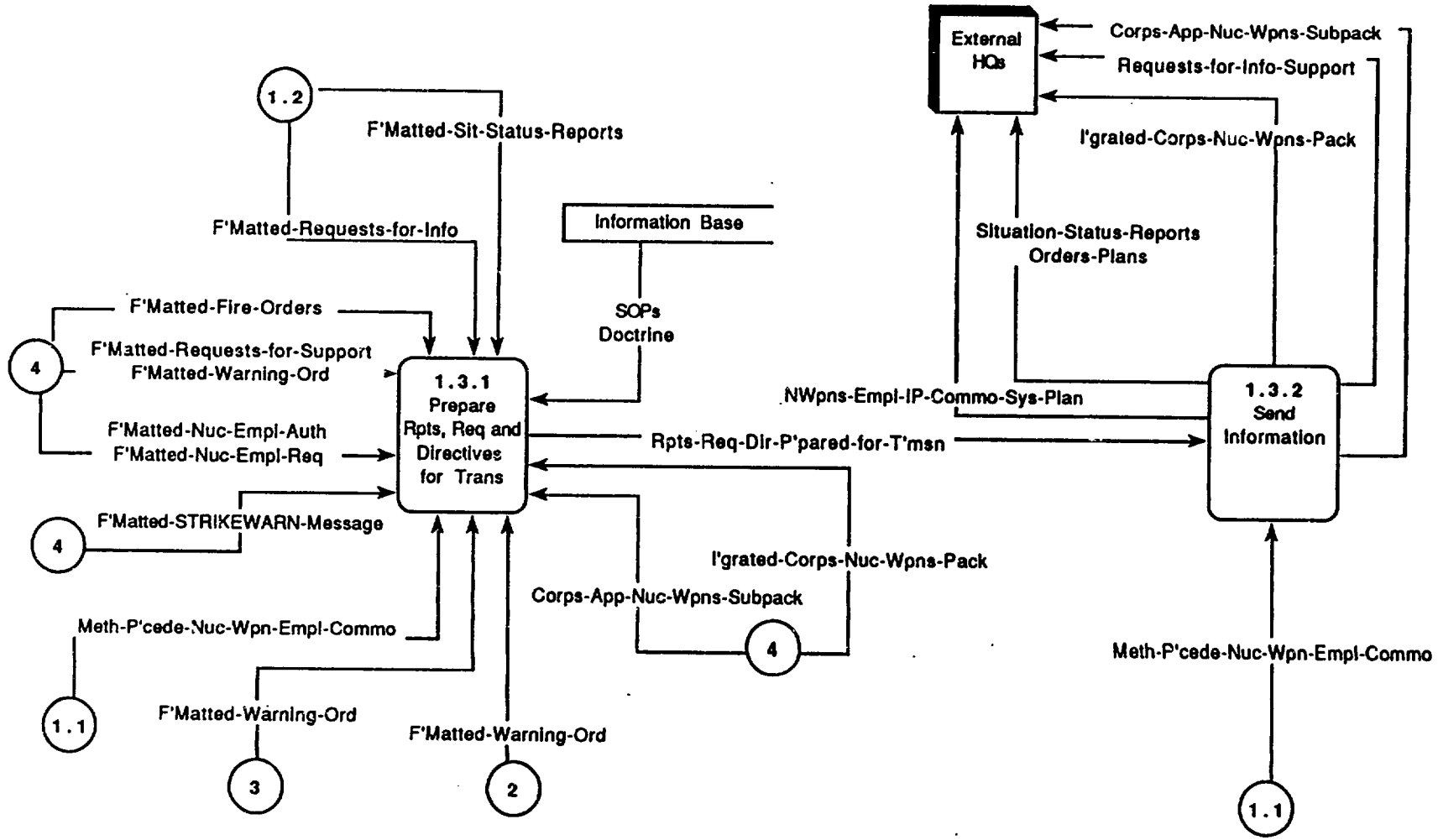
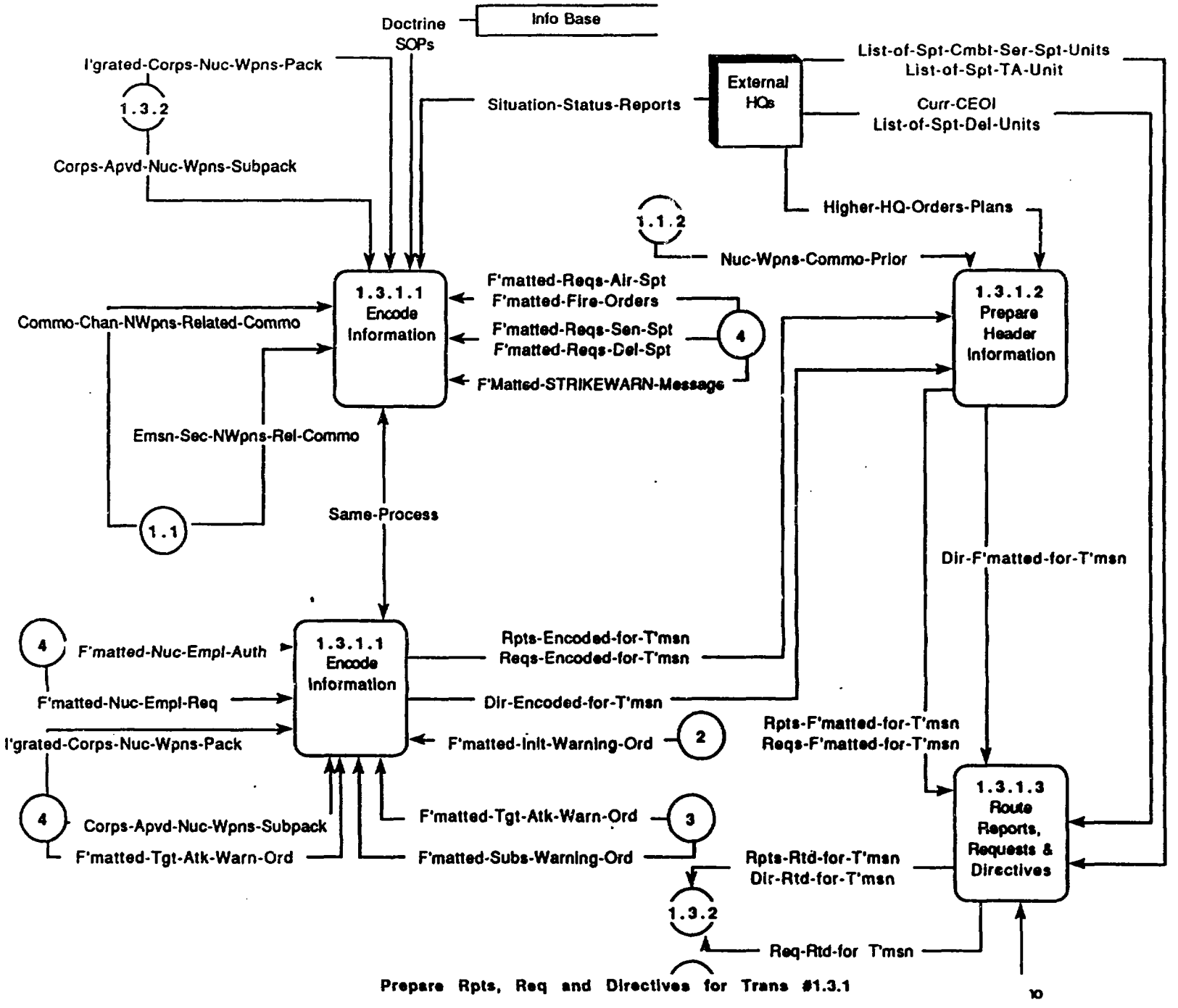
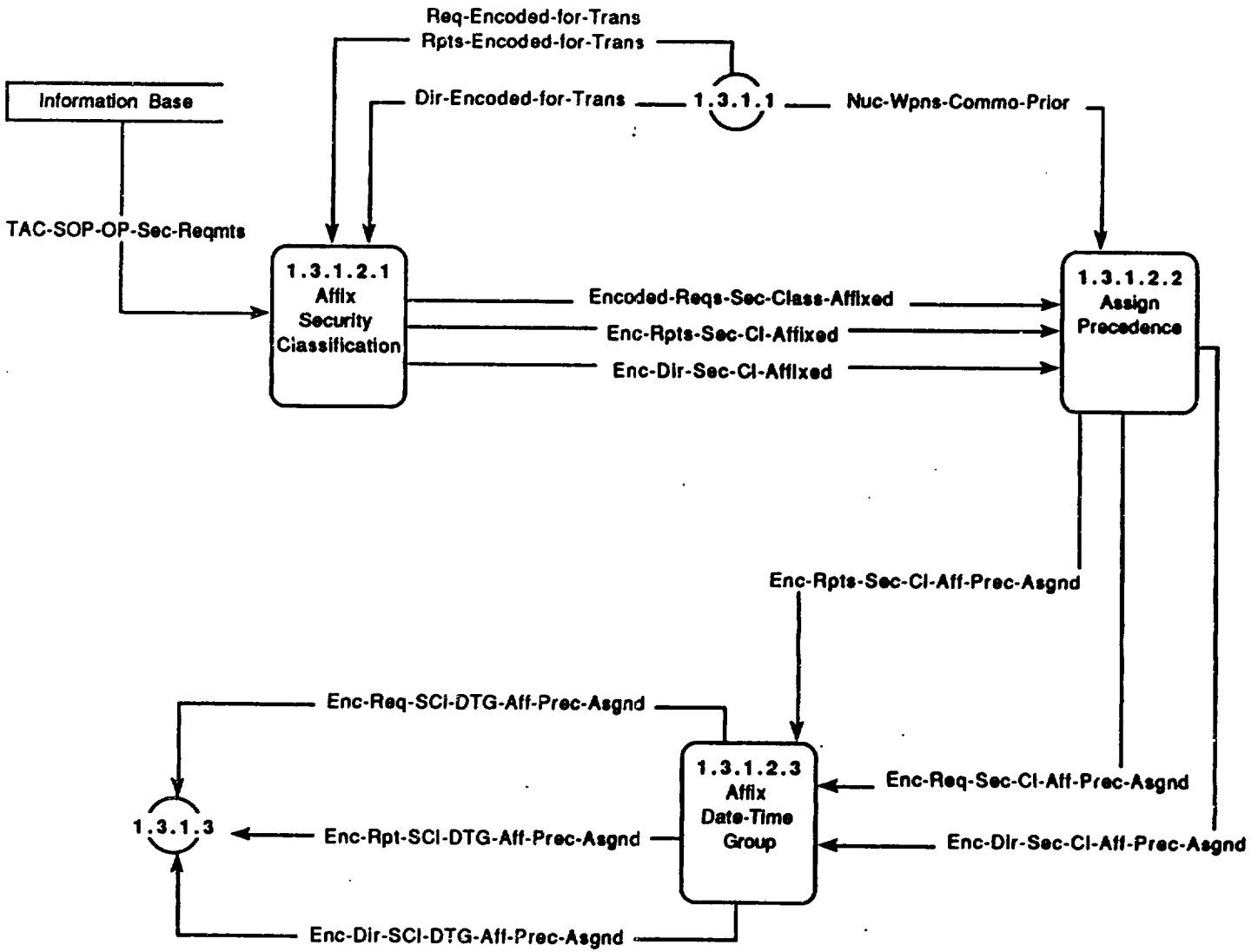


Generate Periodic Reports #1.2.4.1



Transmit Information #1.3


Doctrine SOPs
Info Base
I'grated-Corps-Nuc-Wpns-Pack
1.3.2
Corps-Apvd-Nuc-Wpns-Subpack
Situation-Status-Reports
External HQs
List-of-Spt-Cmbt-Ser-Spt-Units
List-of-Spt-TA-Unit
Curr-CEOI
List-of-Spt-Del-Units
Higher-HQ-Orders-Plans
1.1.2
Nuc-Wpns-Commo-Prior
Commo-Chan-NWpns-Related-Commo
1.3.1.1 Encode Information
F'matted-Reqs-Air-Spt
F'matted-Fire-Orders
F'matted-Reqs-Sen-Spt
F'matted-Reqs-Del-Spt
F'Matted-STRIKEWARN-Message
4
1.3.1.2 Prepare Header Information
Emsn-Sec-NWpns-Rel-Commo
1.1
Same-Process
Dir-F'matted-for-T'msn
4
F'matted-Nuc-Empl-Auth
F'matted-Nuc-Empl-Req
I'grated-Corps-Nuc-Wpns-Pack
1.3.1.1 Encode Information
Rpts-Encoded-for-T'msn
Reqs-Encoded-for-T'msn
Dir-Encoded-for-T'msn
F'matted-Init-Warning-Ord
2
Rpts-F'matted-for-T'msn
Reqs-F'matted-for-T'msn
4
Corps-Apvd-Nuc-Wpns-Subpack
F'matted-Tgt-Atk-Warn-Ord
F'matted-Tgt-Atk-Warn-Ord
F'matted-Subs-Warning-Ord
3
1.3.1.3 Route Reports, Requests & Directives
Rpts-Rtd-for-T'msn
Dir-Rtd-for-T'msn
1.3.2
Req-Rtd-for T'msn
Prepare Rpts, Req and Directives for Trans #1.3.1



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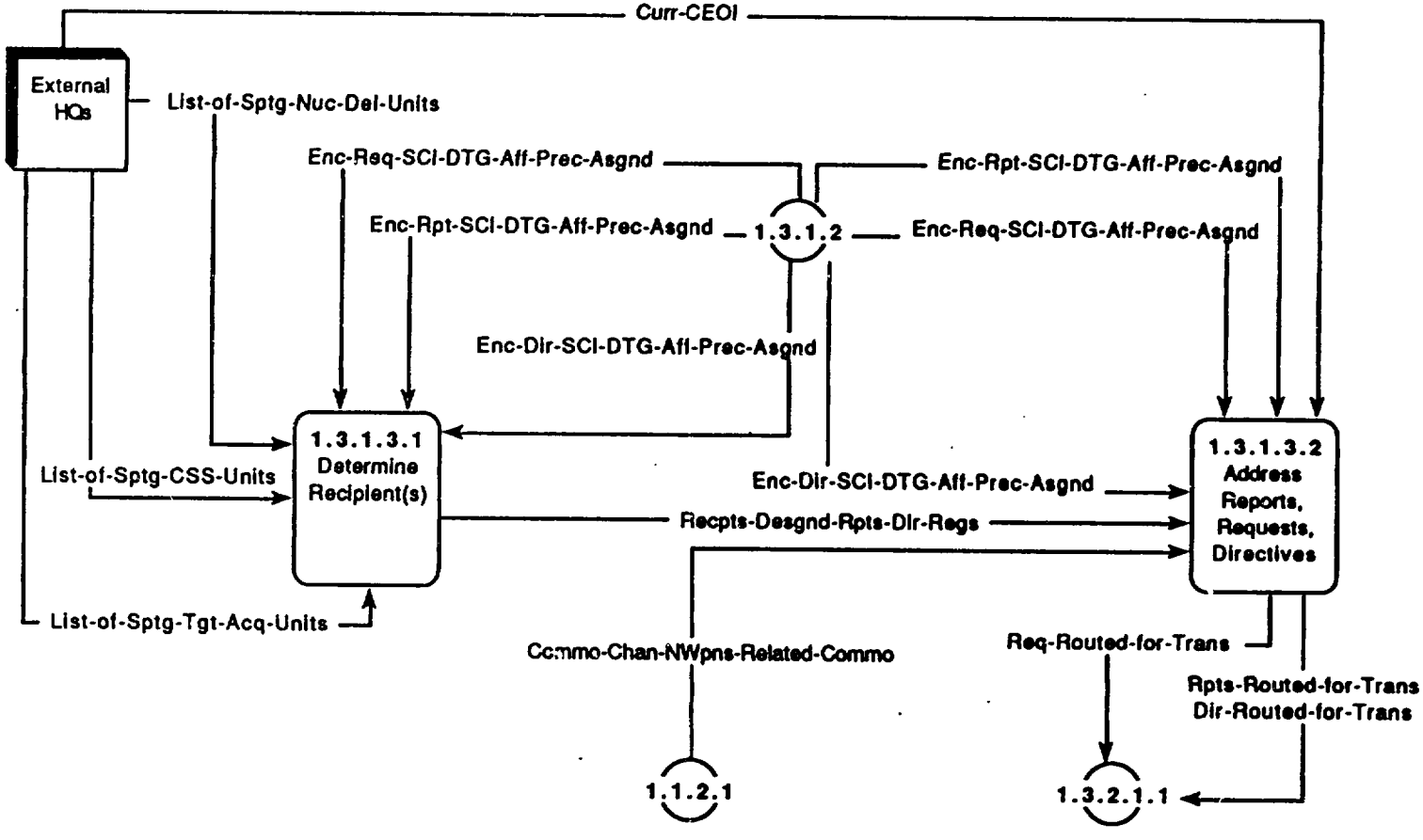
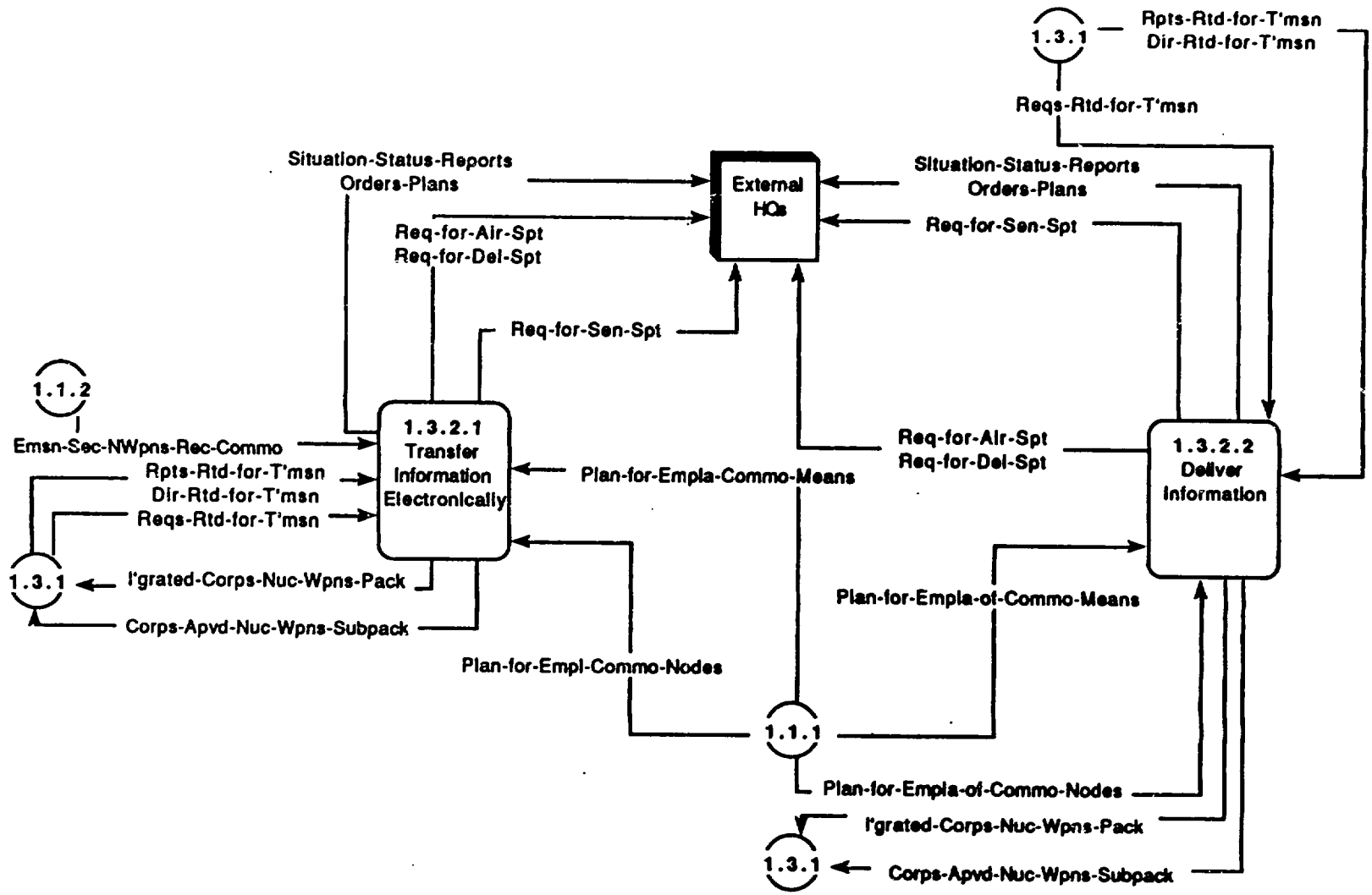


Route Reports, Requests & Directives #1.3.1.3



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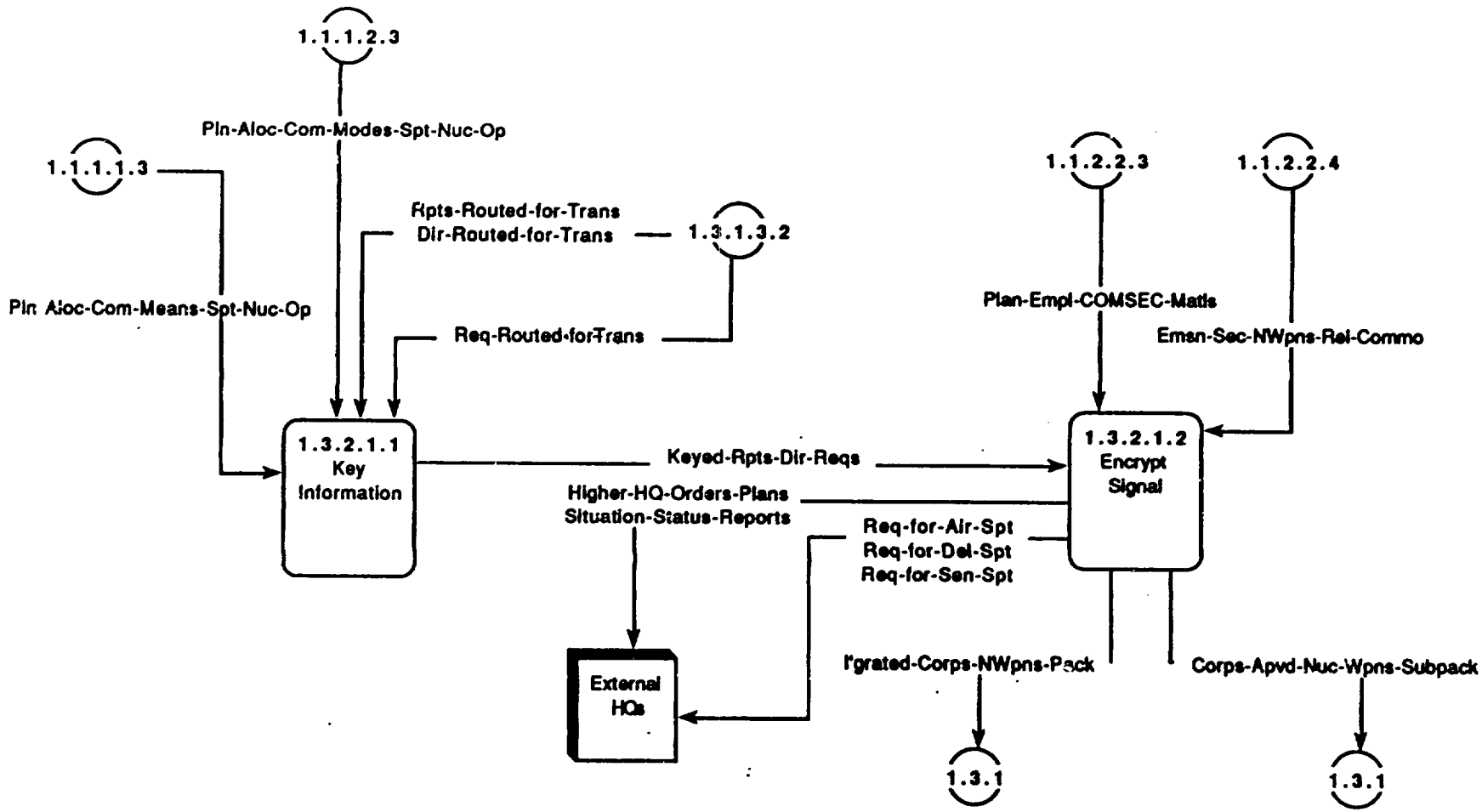
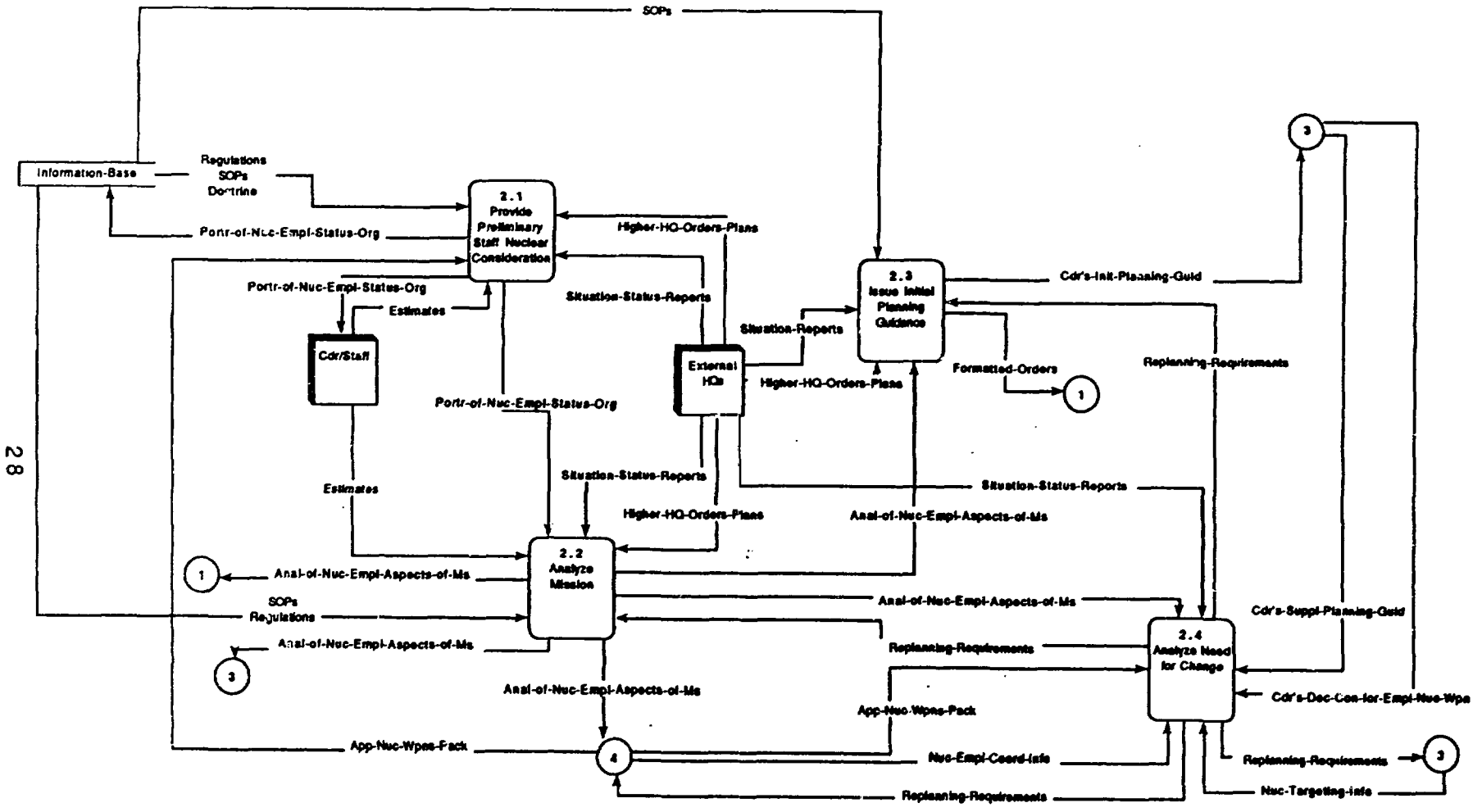
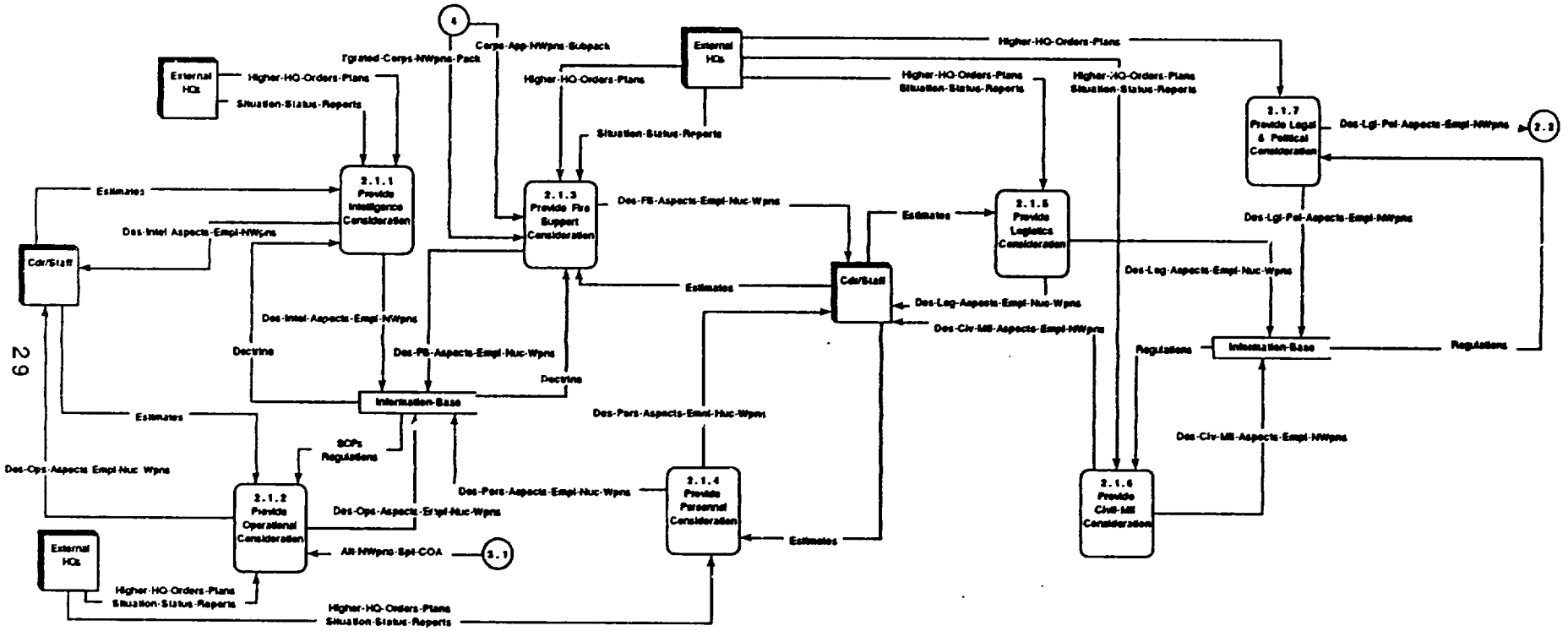


Transfer Information Electronically #1.3.2.1

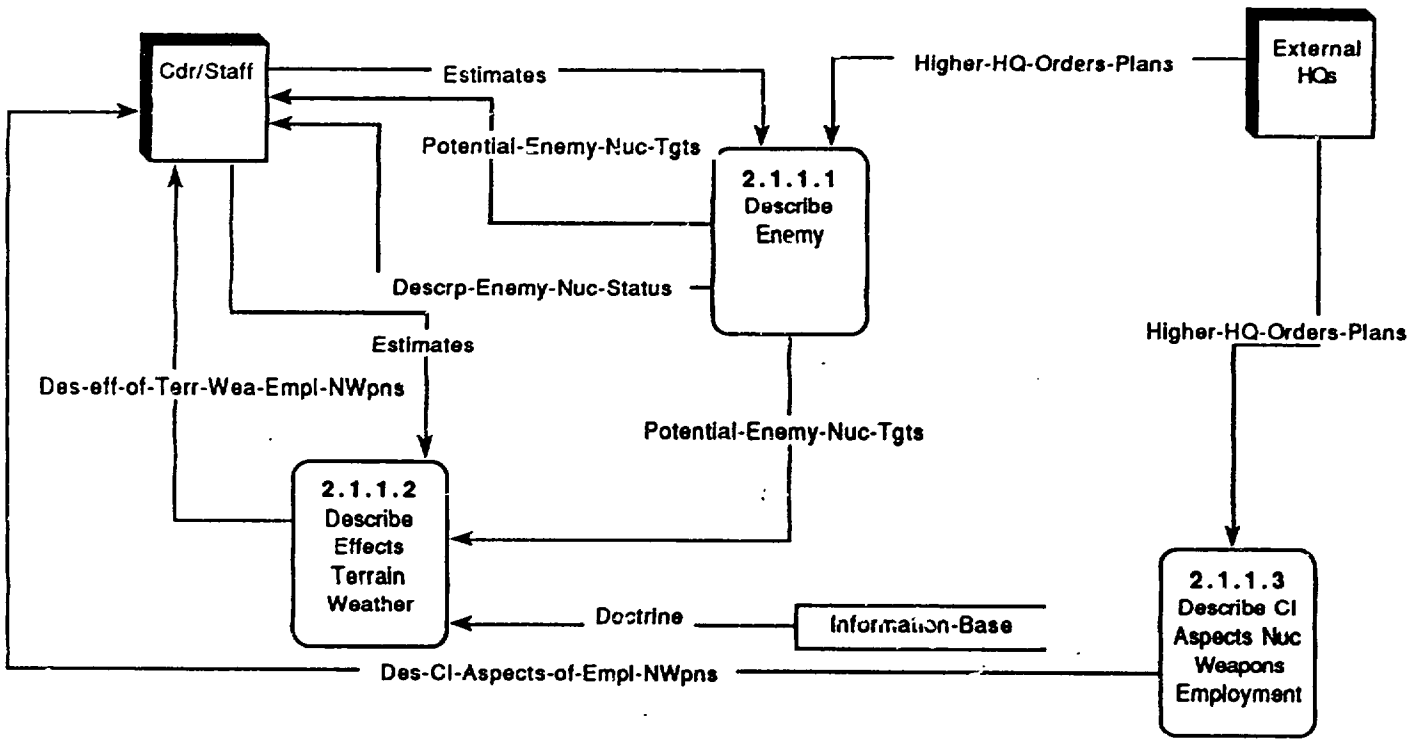
ASSESS SITUATION
(2.1 THROUGH 2.4.3.3)



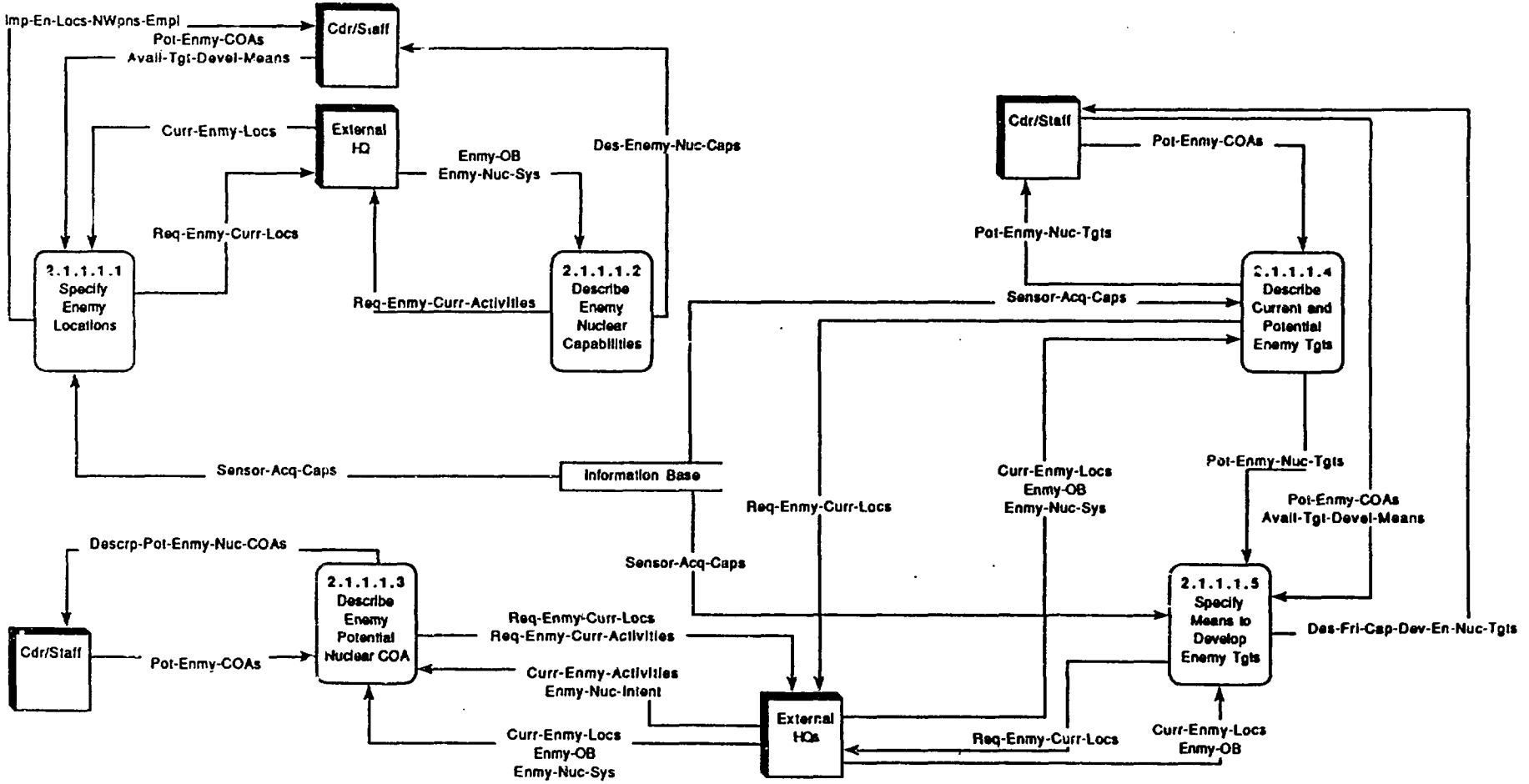
Assess Situation A2



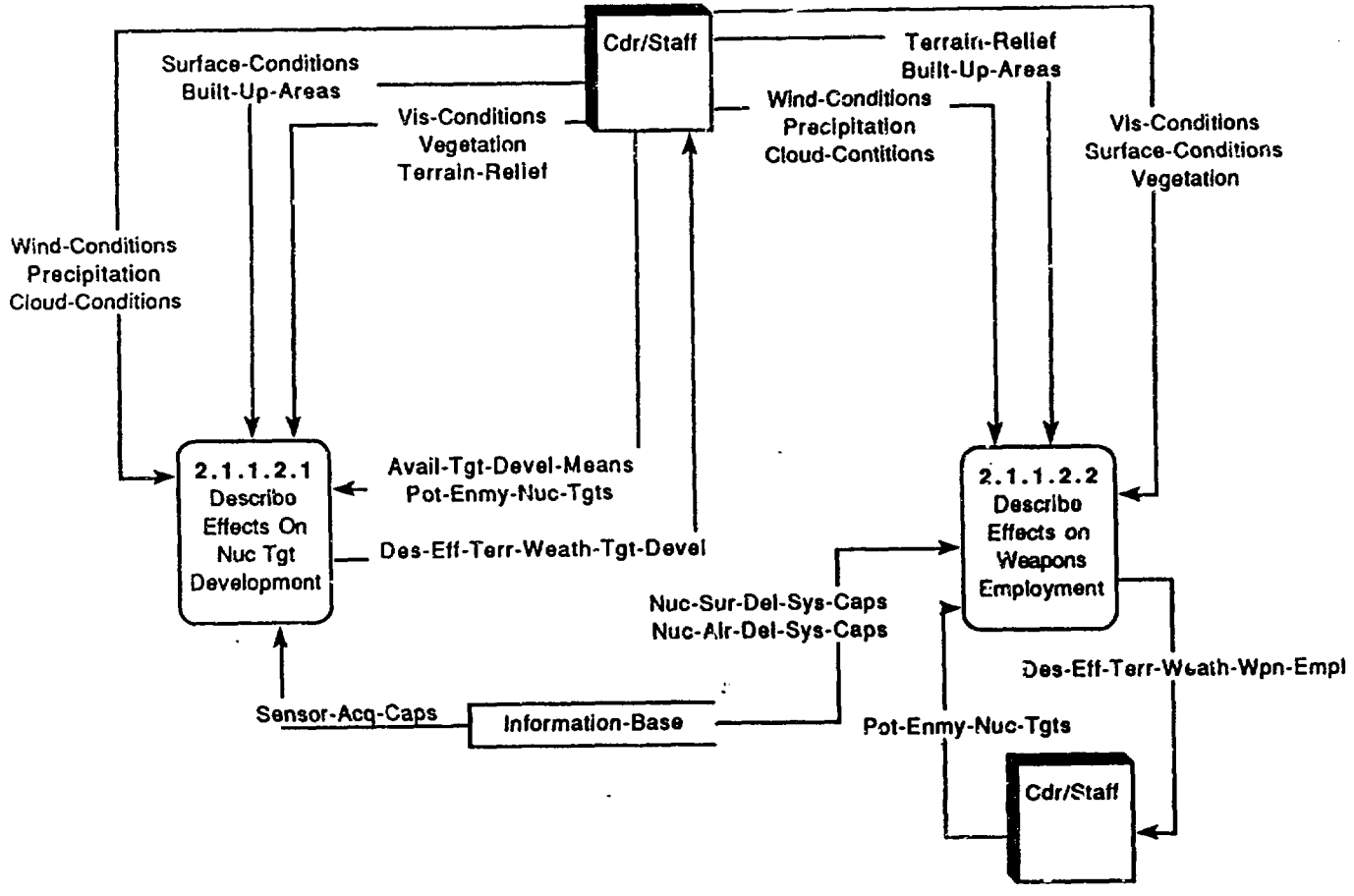
Provide Preliminary Staff Nuclear Consideration A2.1



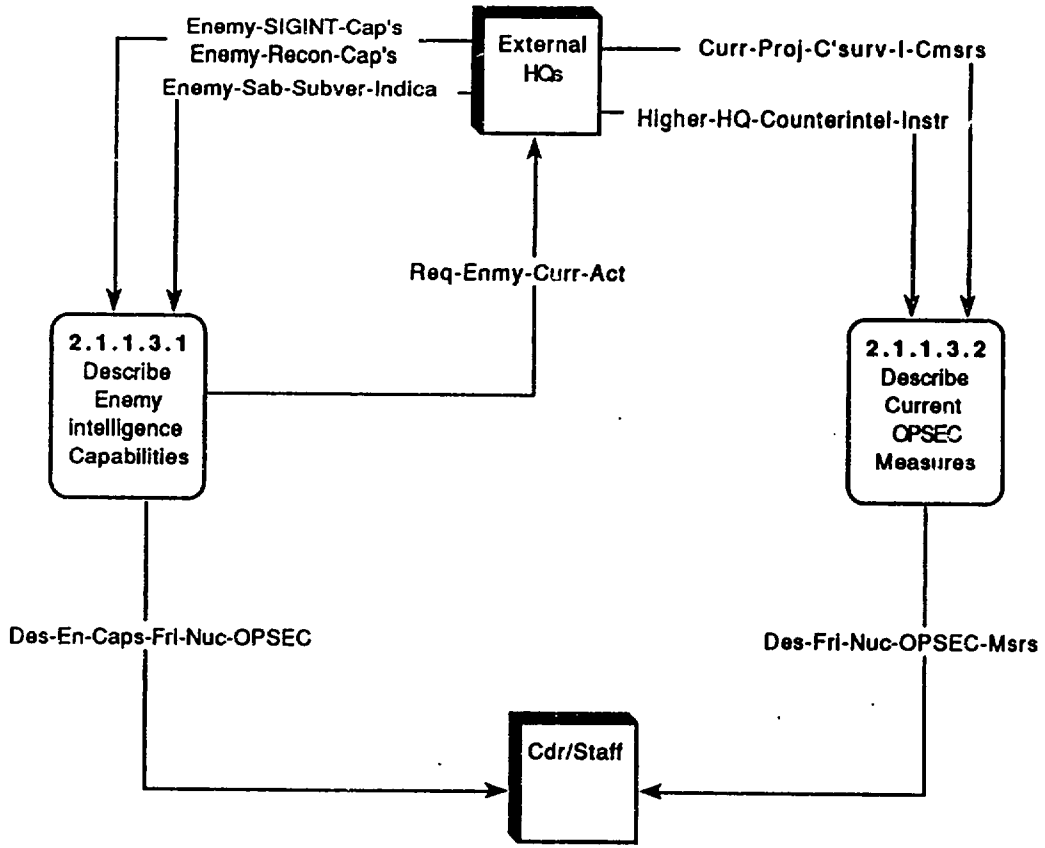
Provide Intelligence Consideration #2.1.1



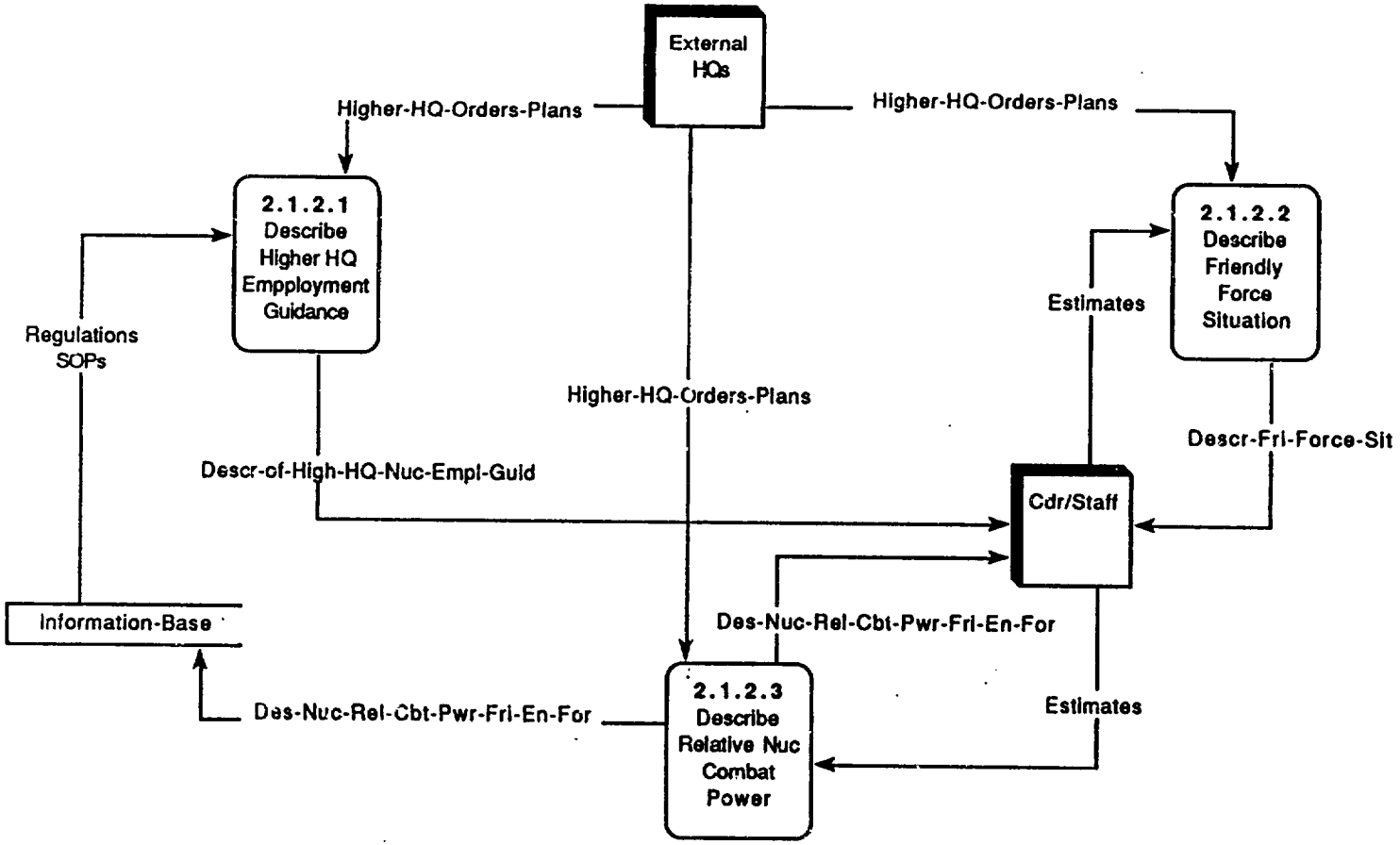
Describe Enemy #2.1.1.1



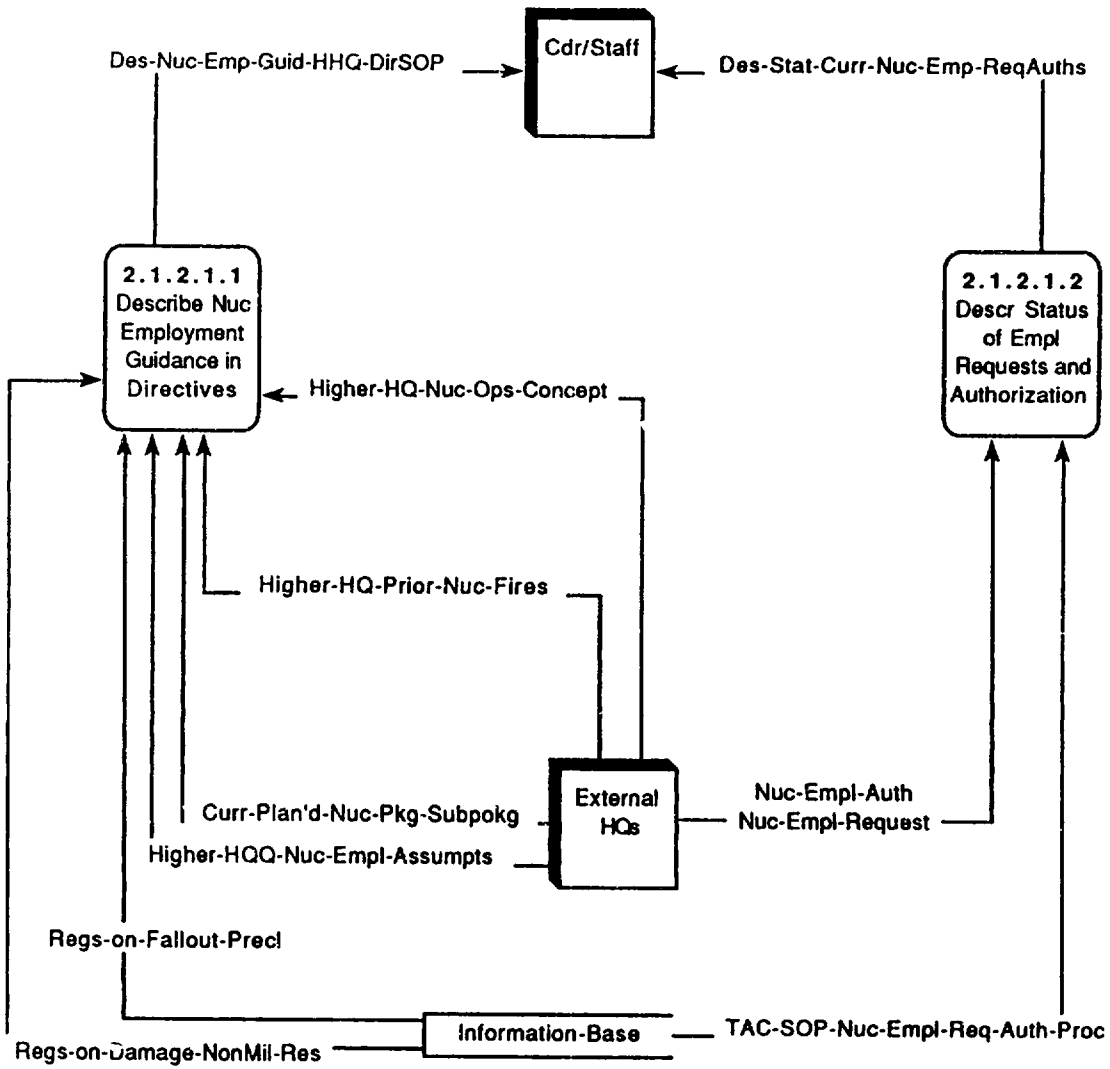
Describe Effects Terrain Weather #2.1.1.2



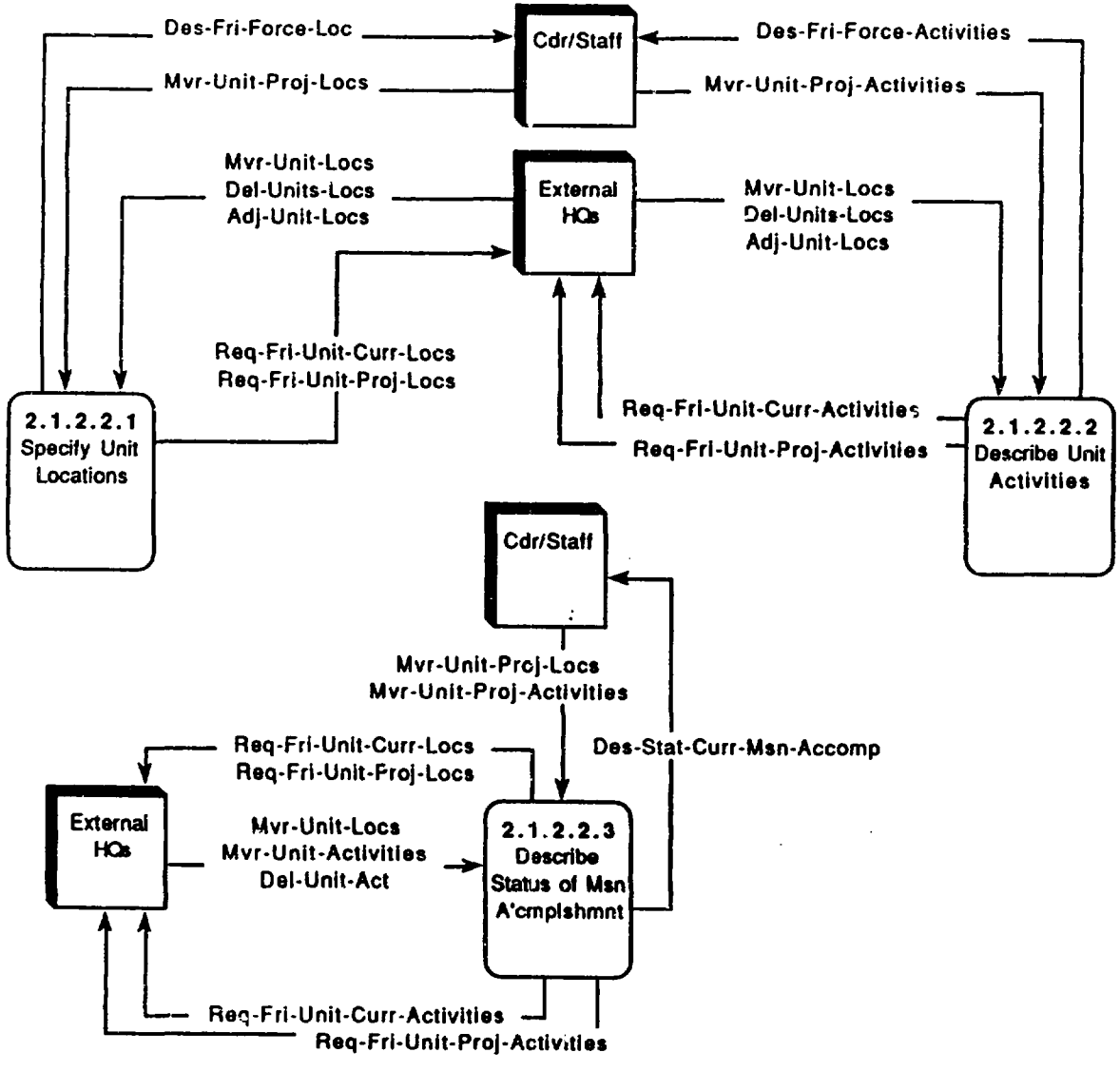
Describe CI Aspects Nuc Weapons Employment #2.1.1.3



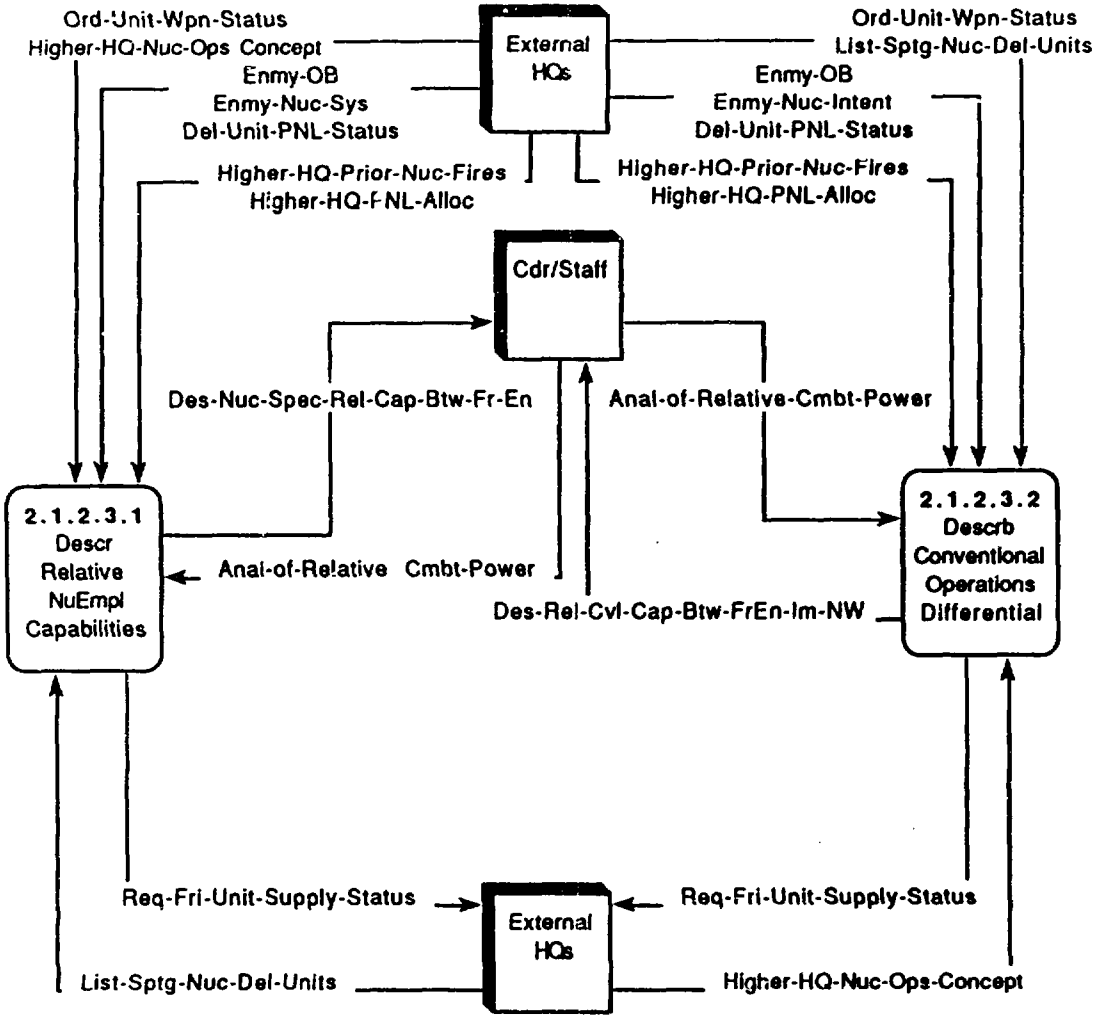
Provide Operational Consideration #2.1.2



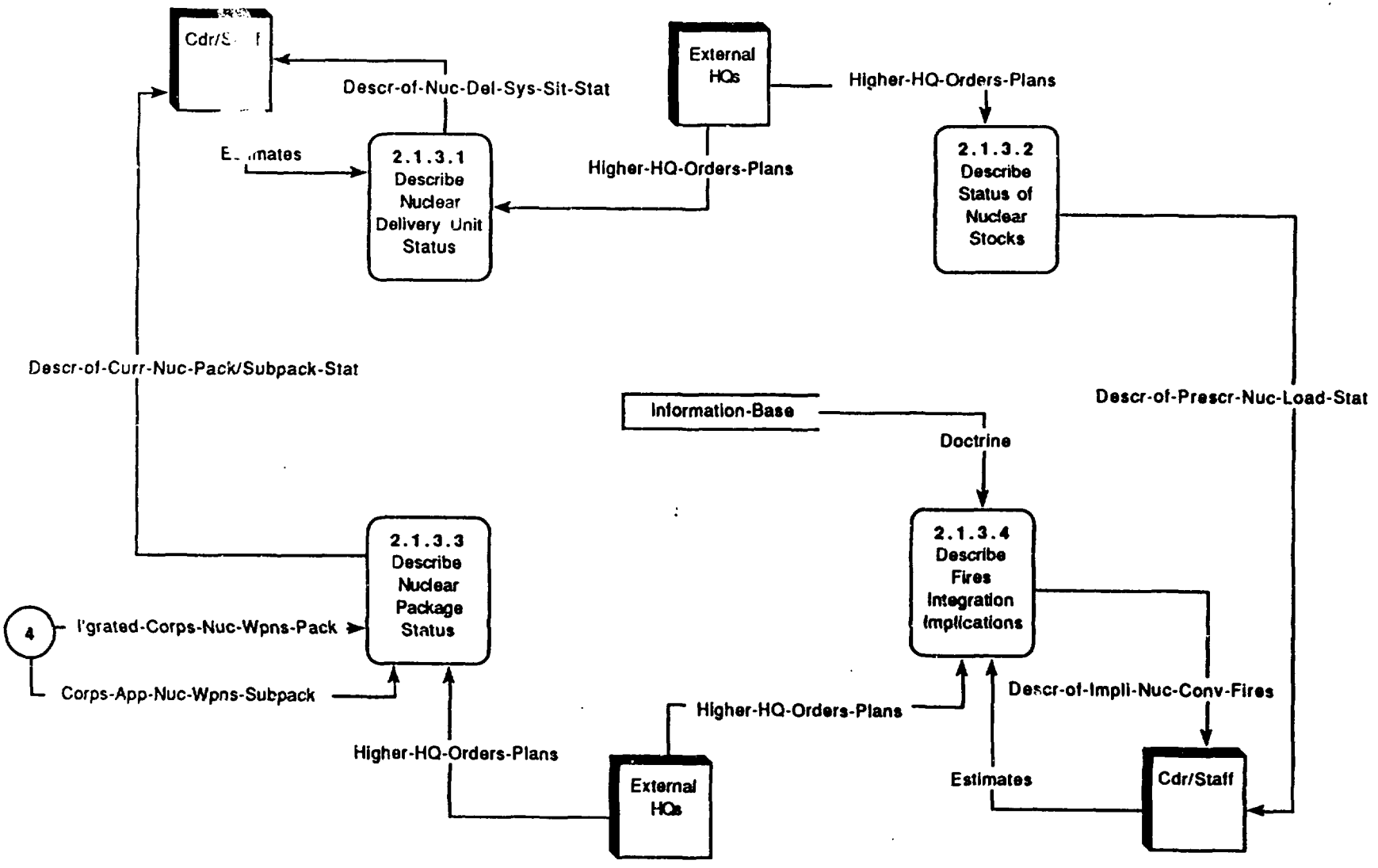
Describe Higher HQ Employment Guidance #2.1.2.1



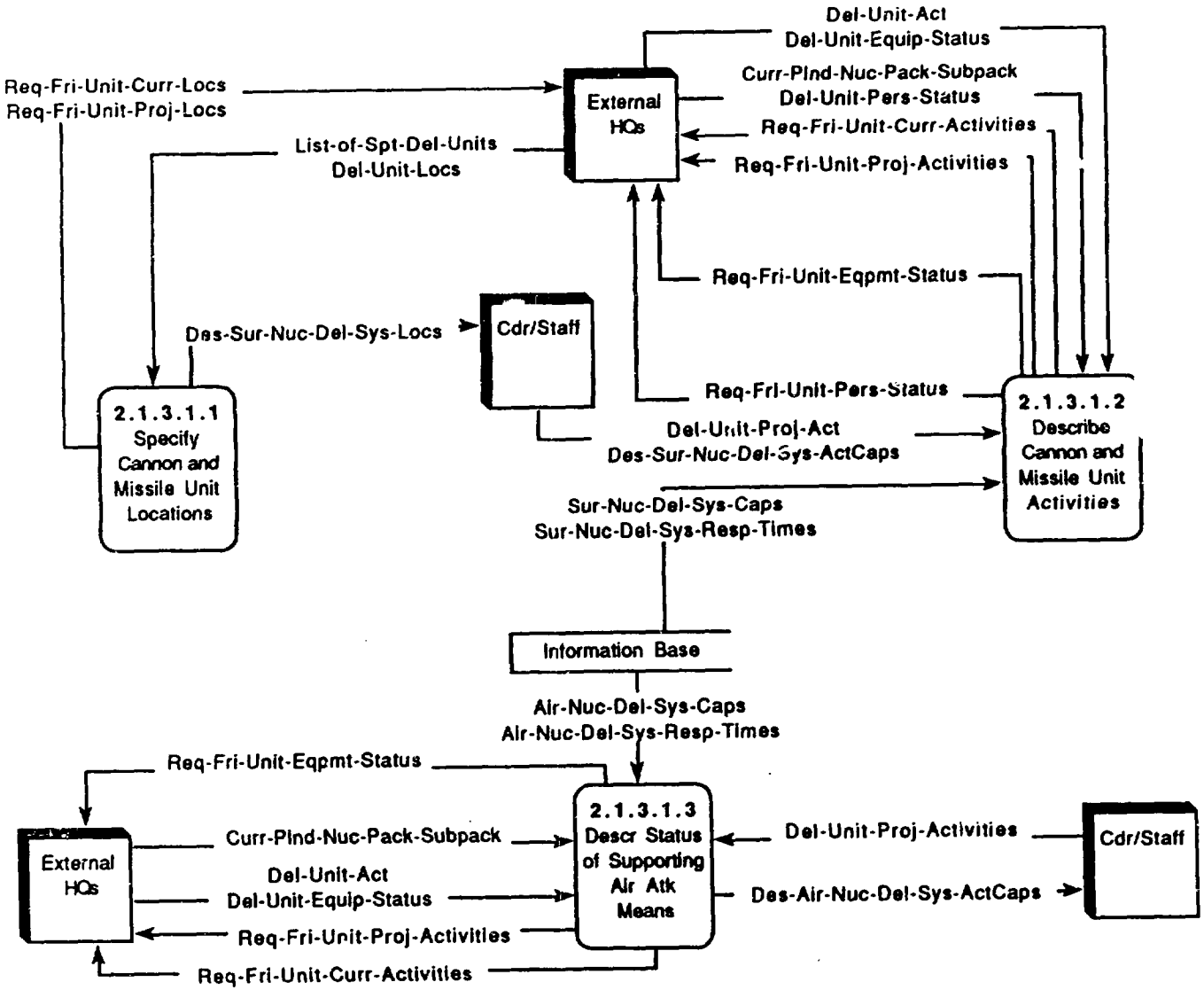
Describe Friendly Force Situation #2.1.2.2



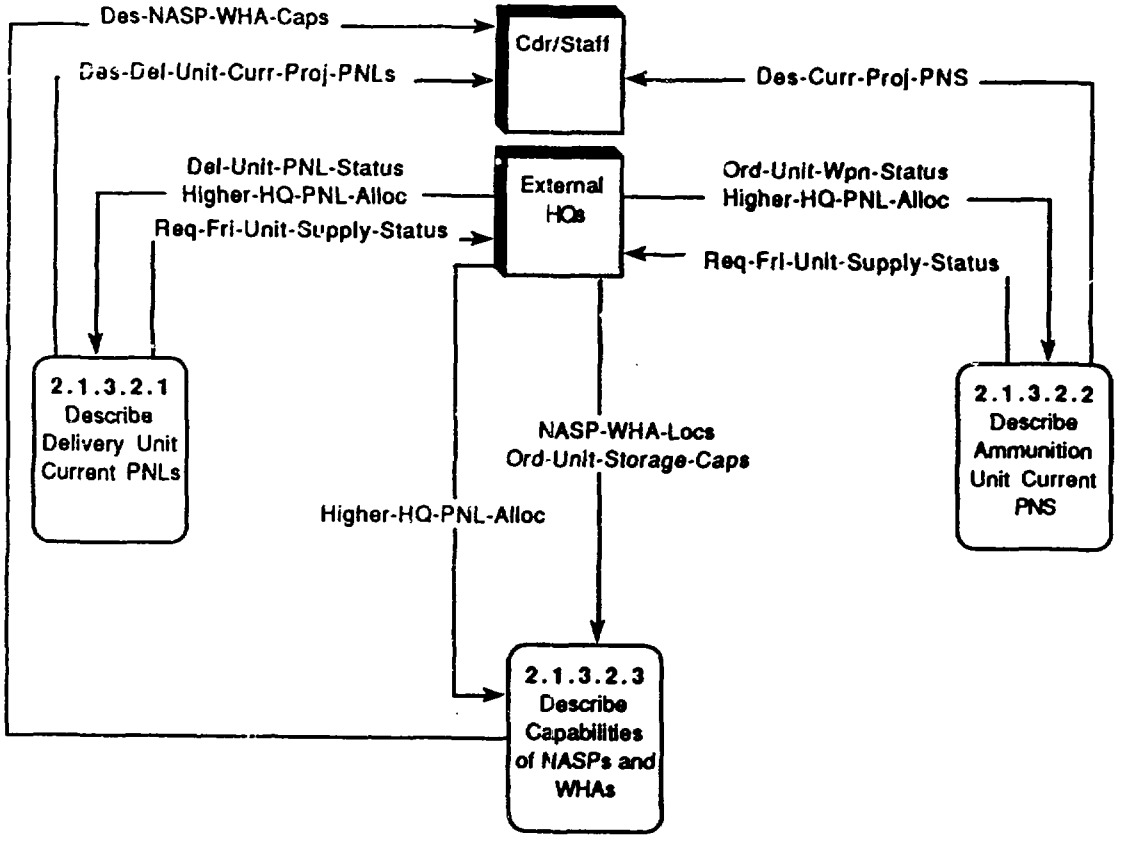
Describe Relative Nuc Combat Power #2.1.2.3



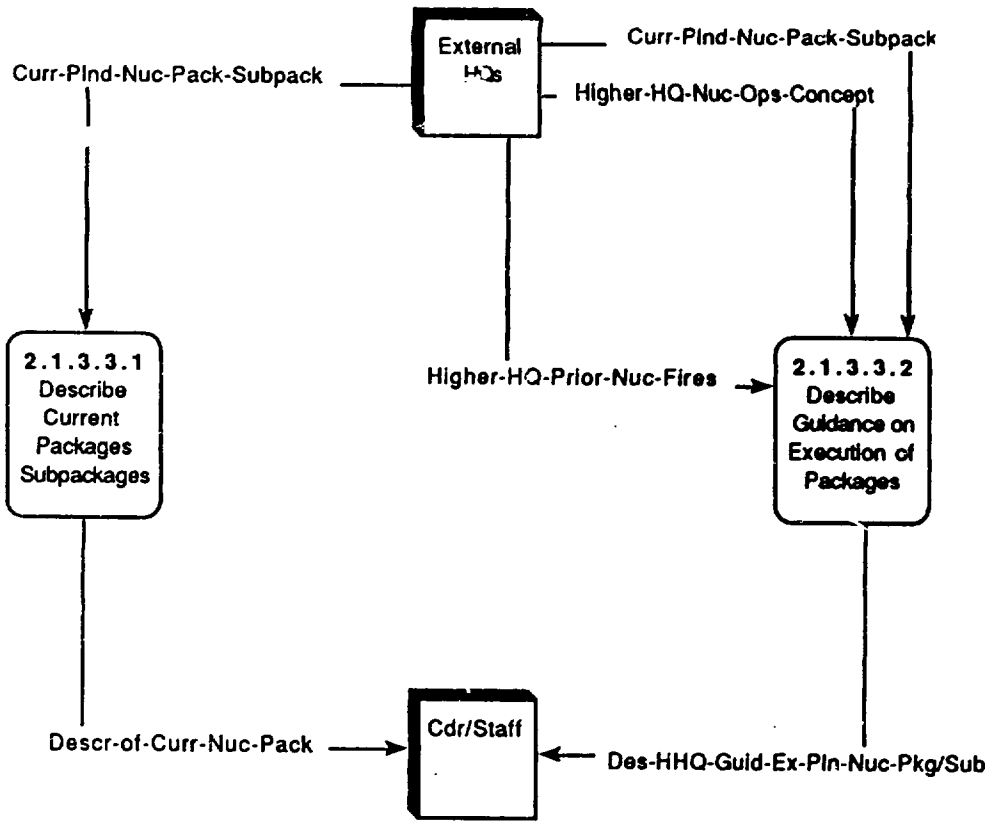
Provide Fire Support Consideration #2.1.3



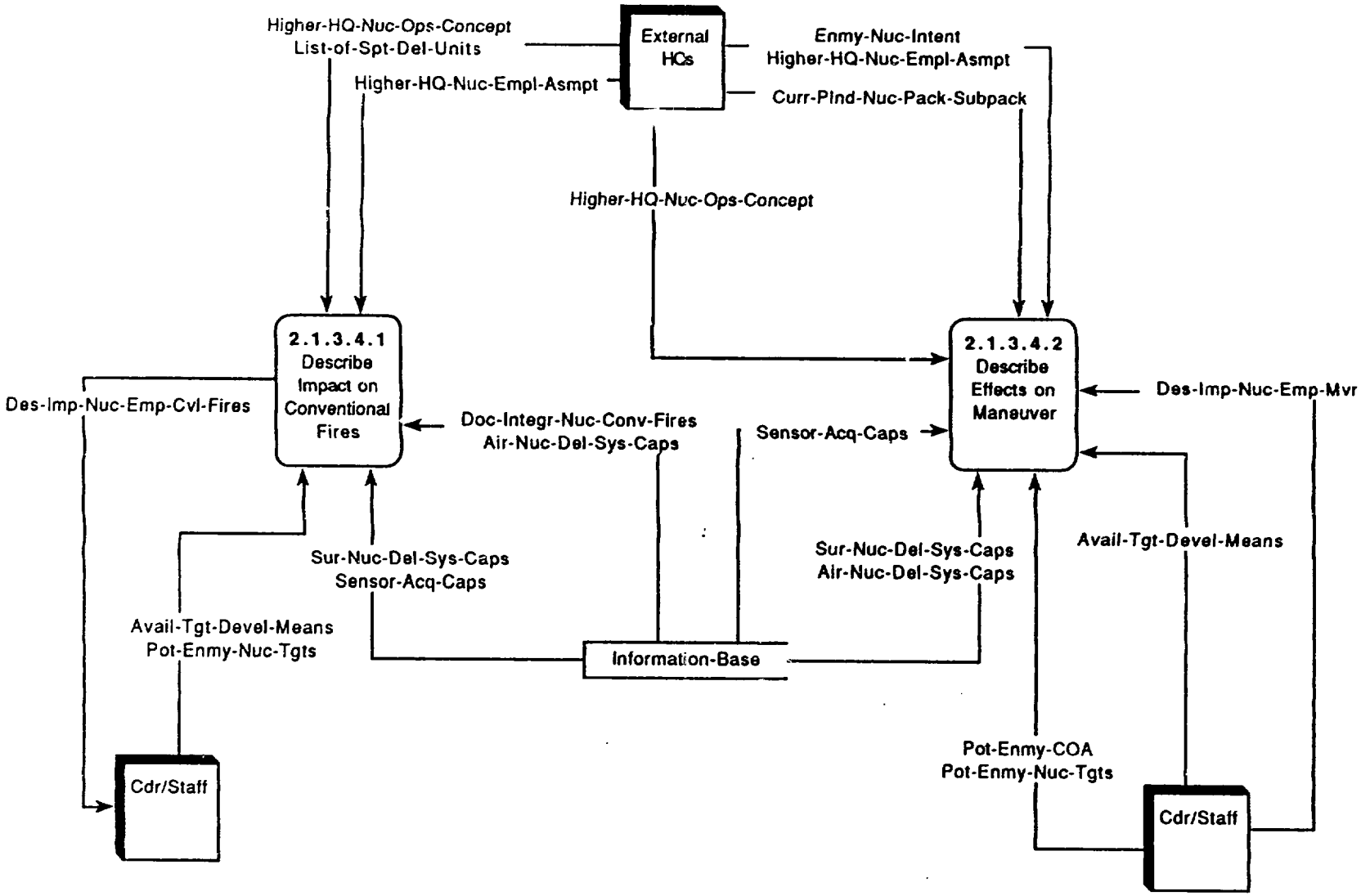
Describe Nuclear Delivery Unit Status #2.1.3.1



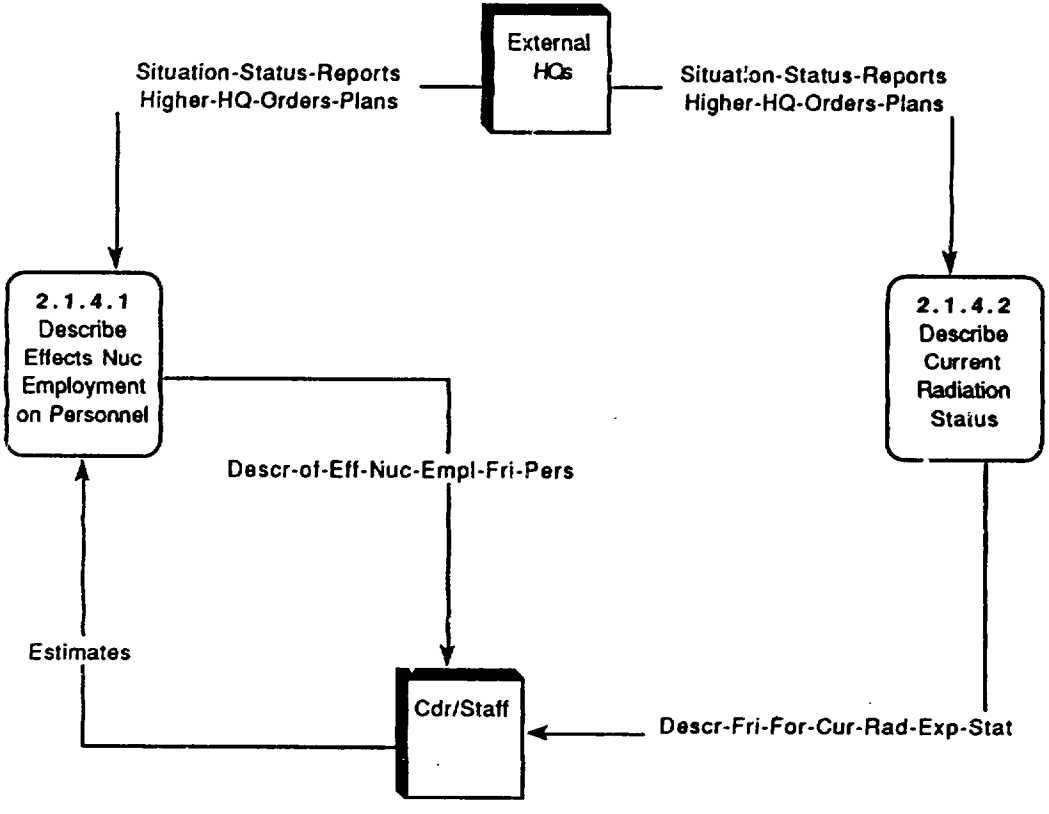
Describe Status of Nuclear Stocks #2.1.3.2



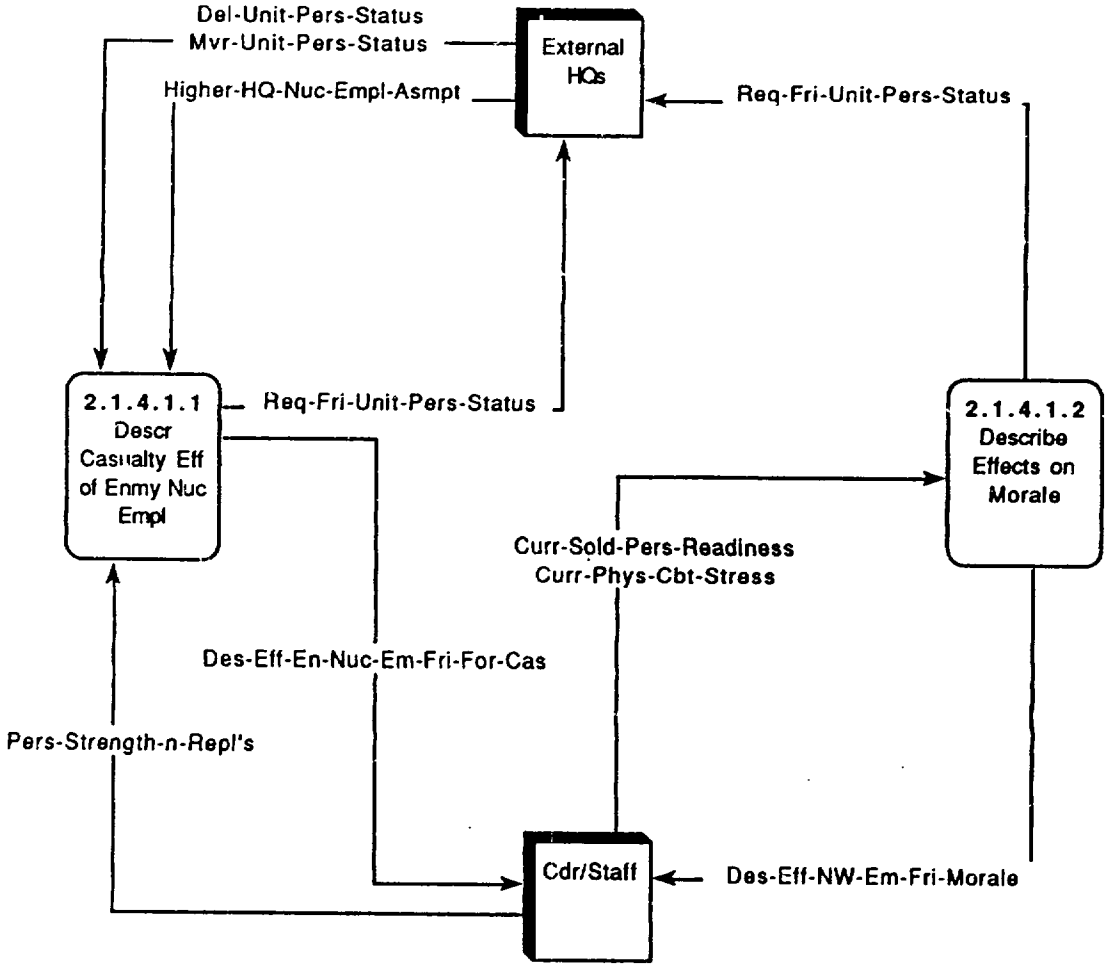
Describe Nuclear Package Status #2.1.3.3



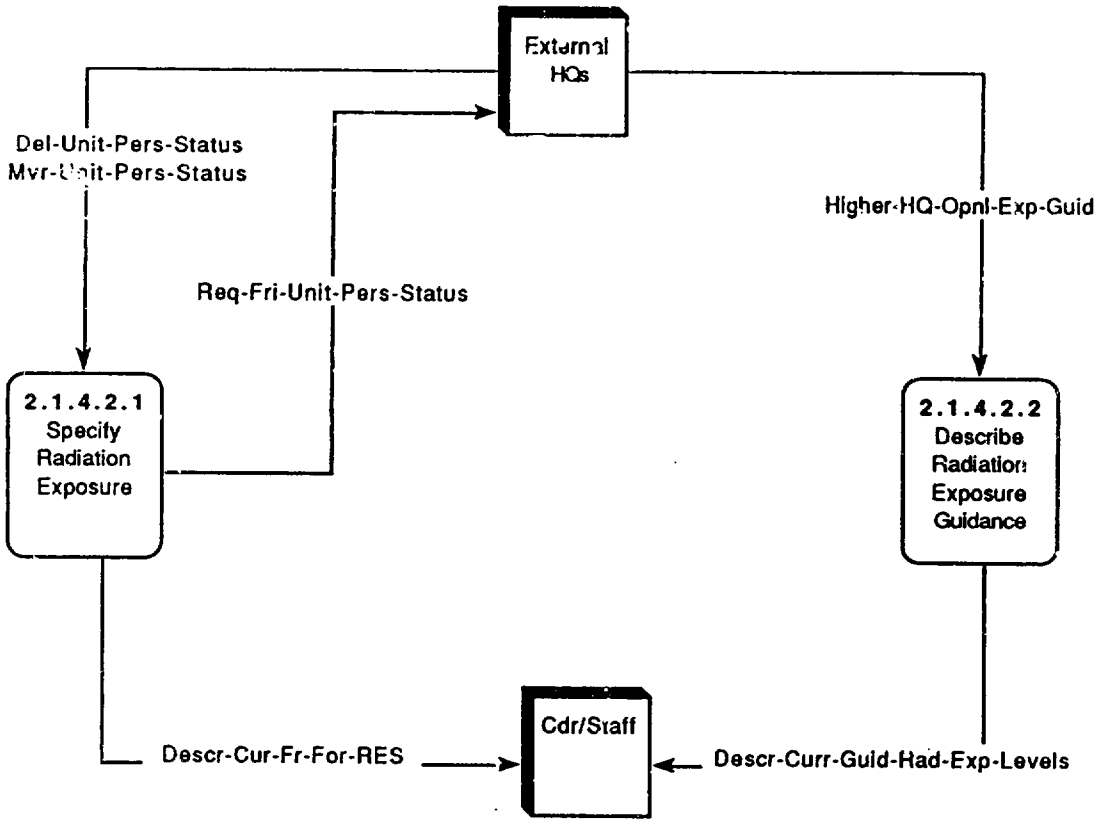
Describe Fires Integration Implications #2.1.3.4



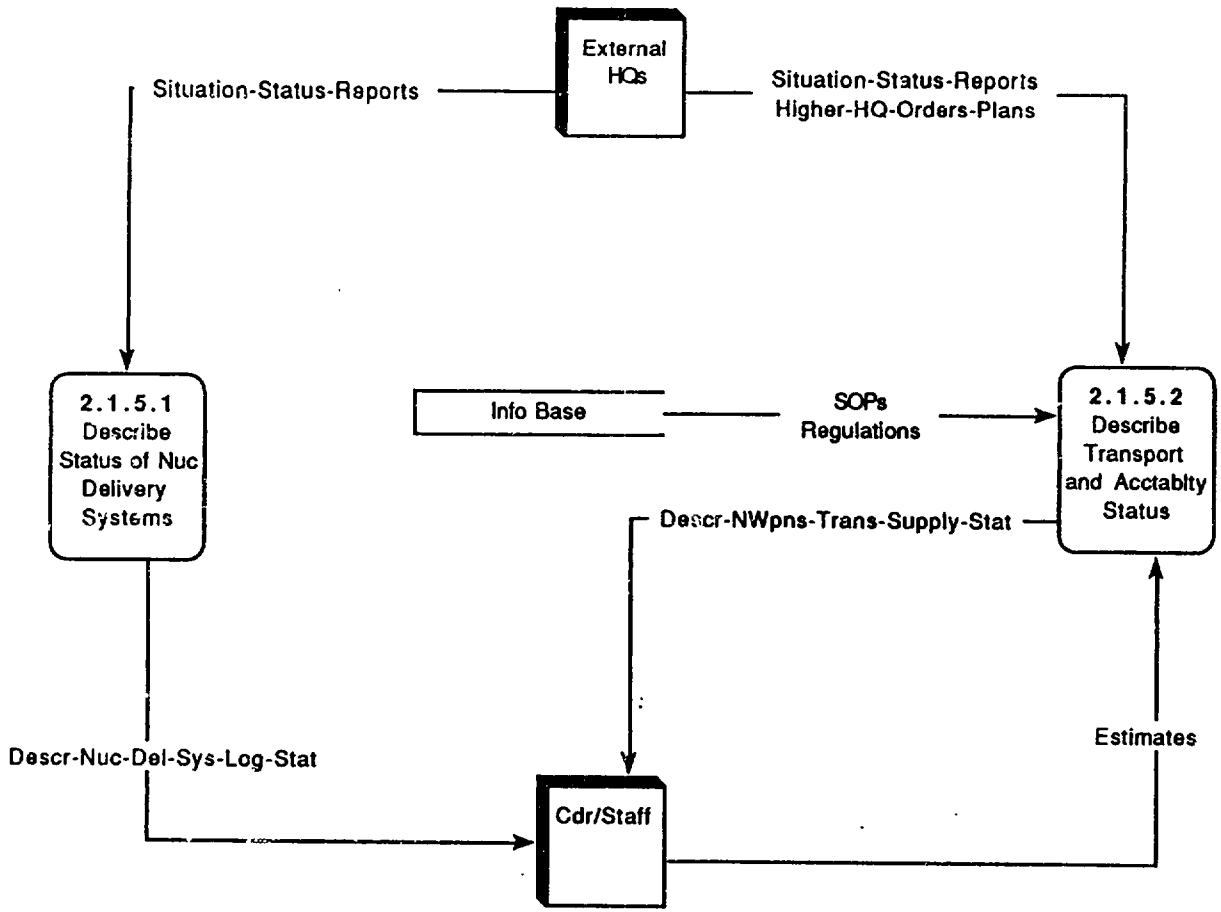
Provide Personnel Consideration #2.1.4



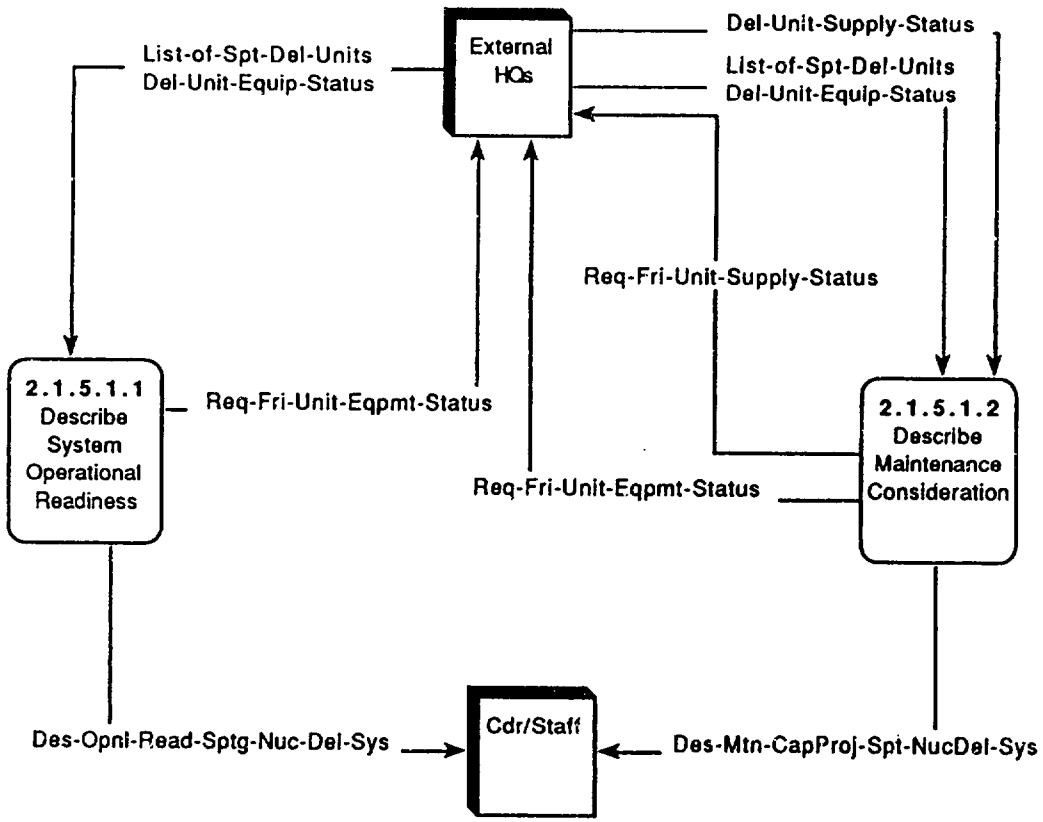
Describe Effects Nuc Employment on Personnel #2.1.4.1



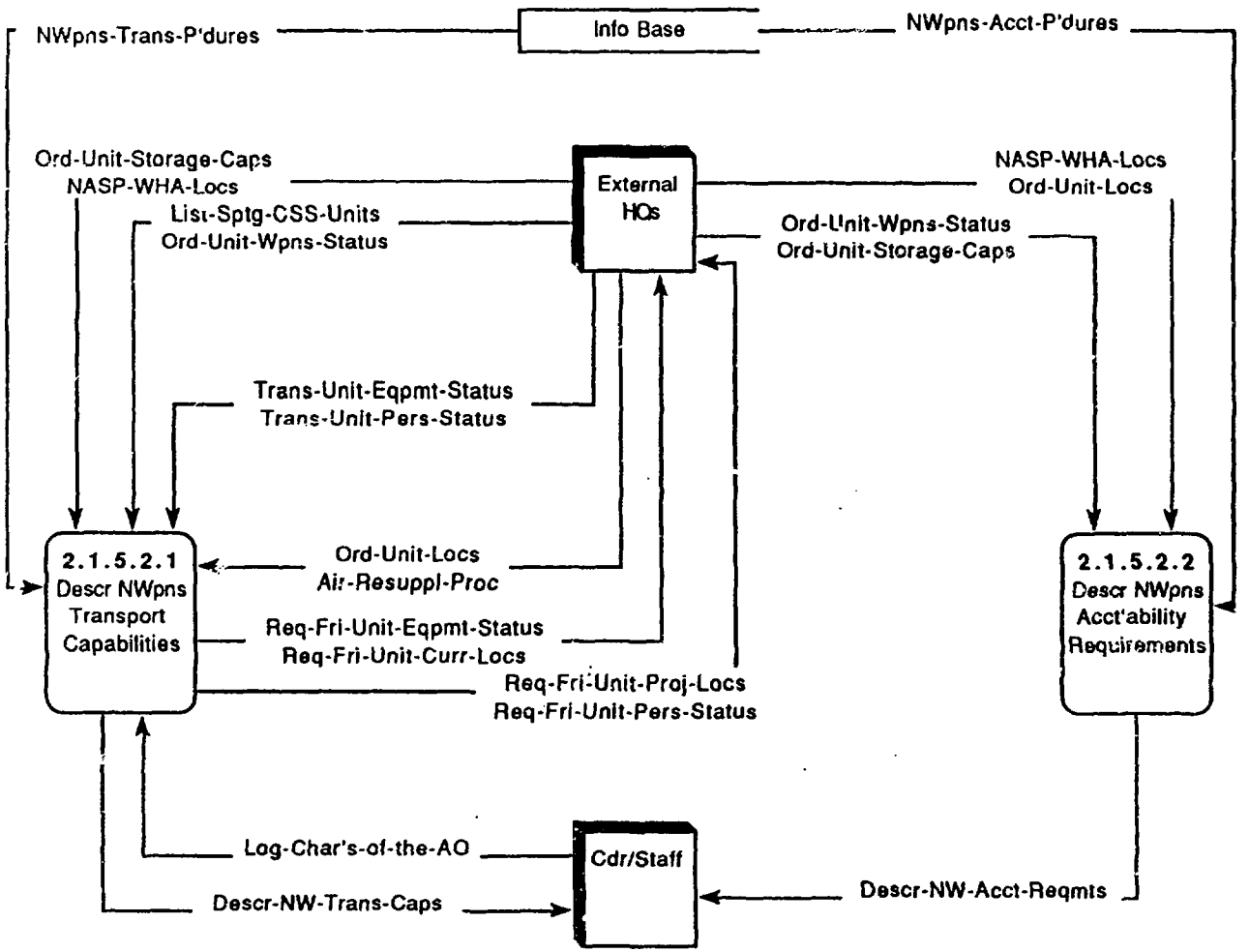
Describe Current Radiation Status #2 1.4.2



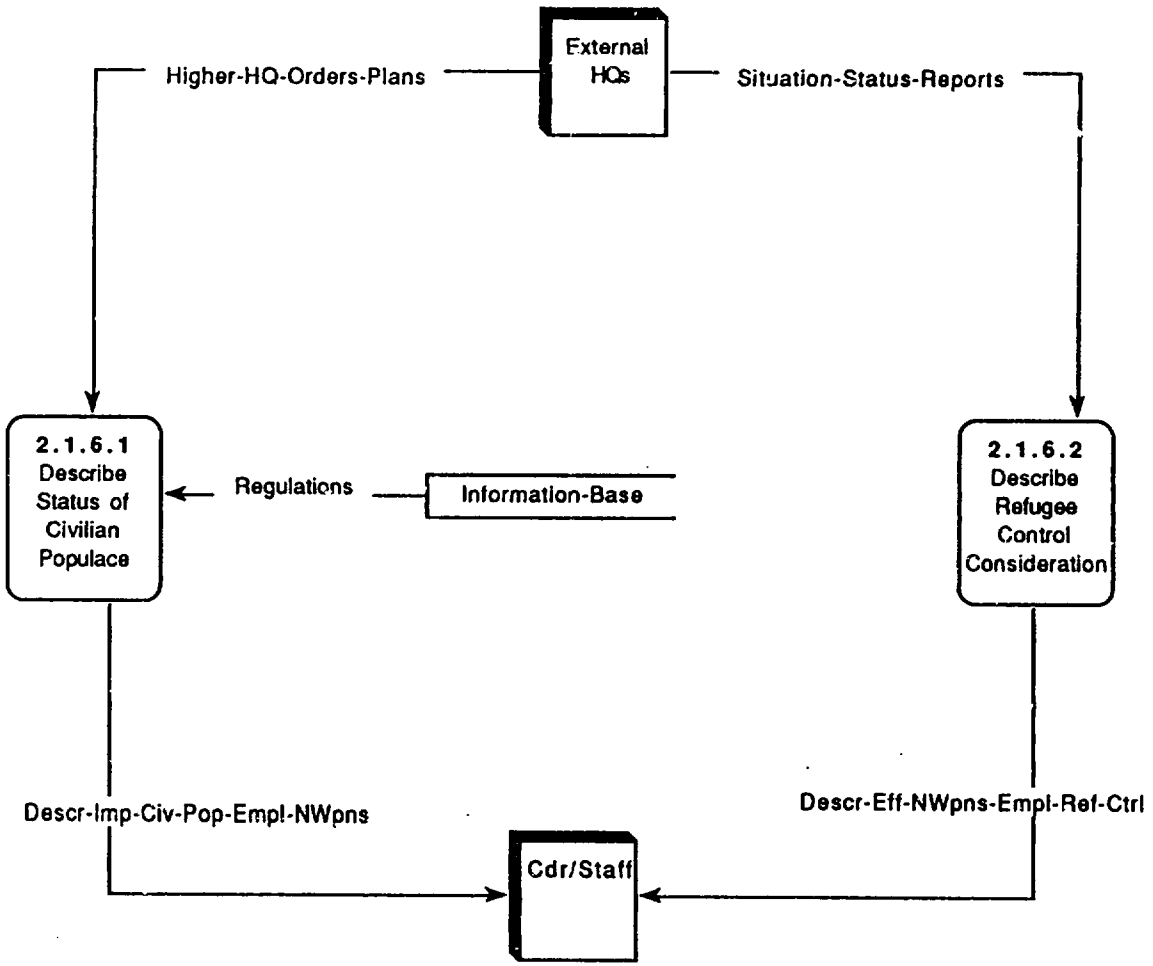
Provide Logistics Consideration #2.1.5



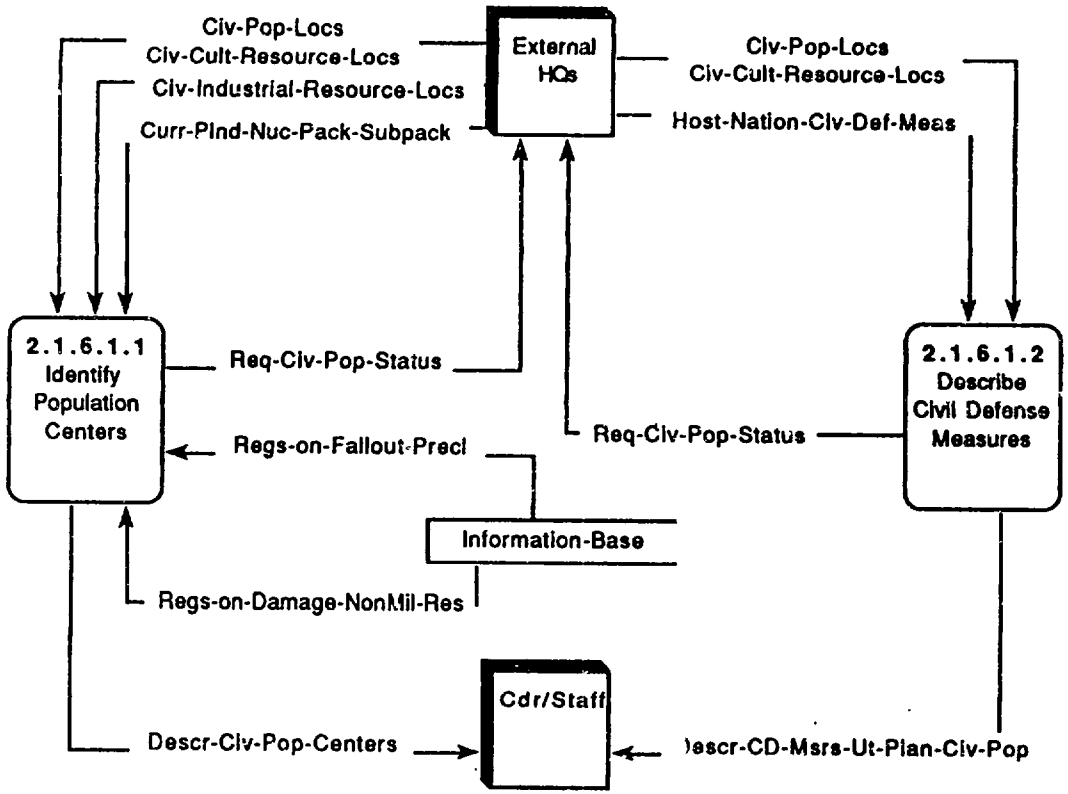
Describe Status of Nuc Delivery Systems #2.1.5.1



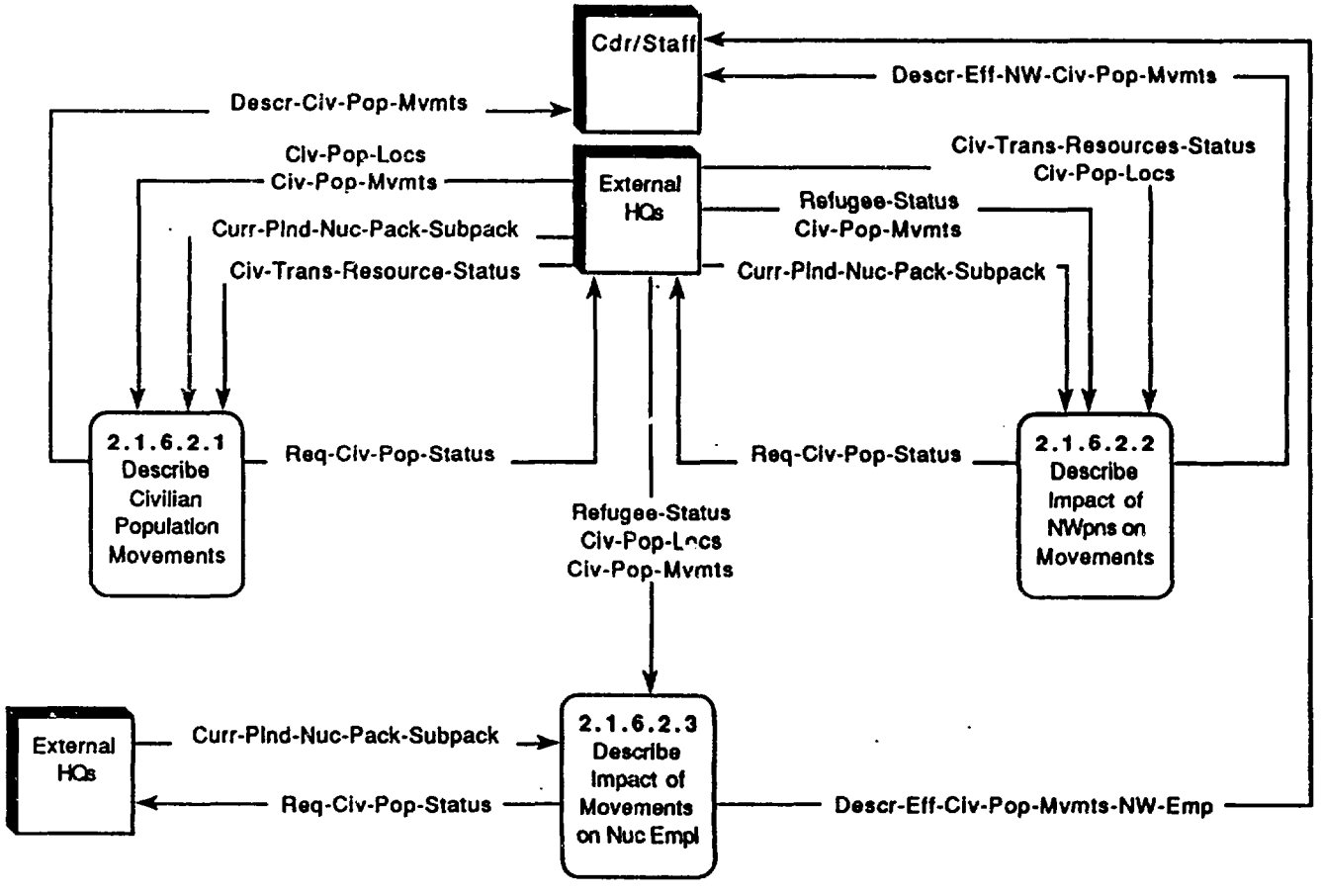
Describe Transport and Acctabilty Status #2.1.5.2



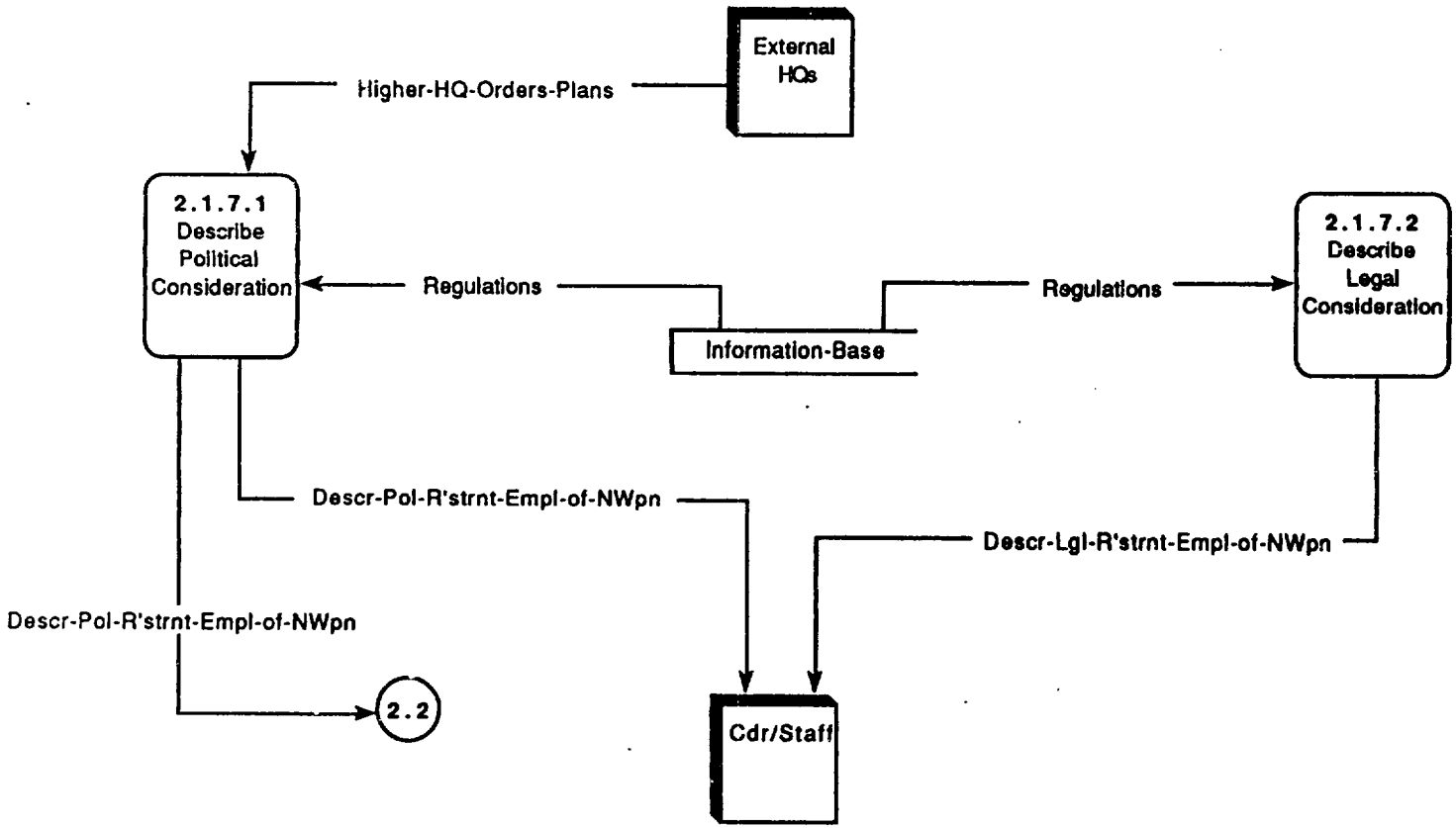
Provide Civil-Mil Consideration #2.1.6



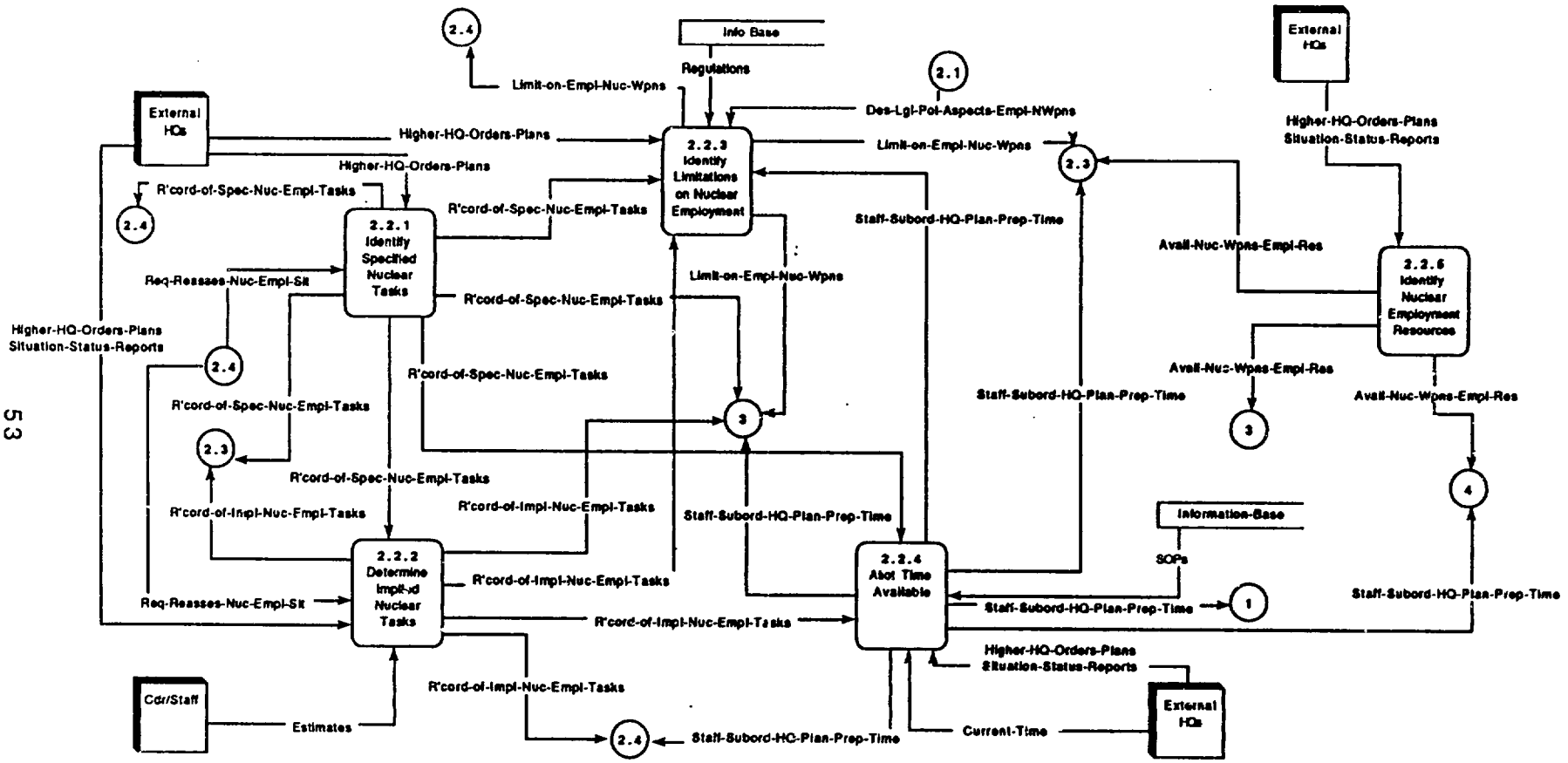
Describe Status of Civilian Populace #2.1.6.1



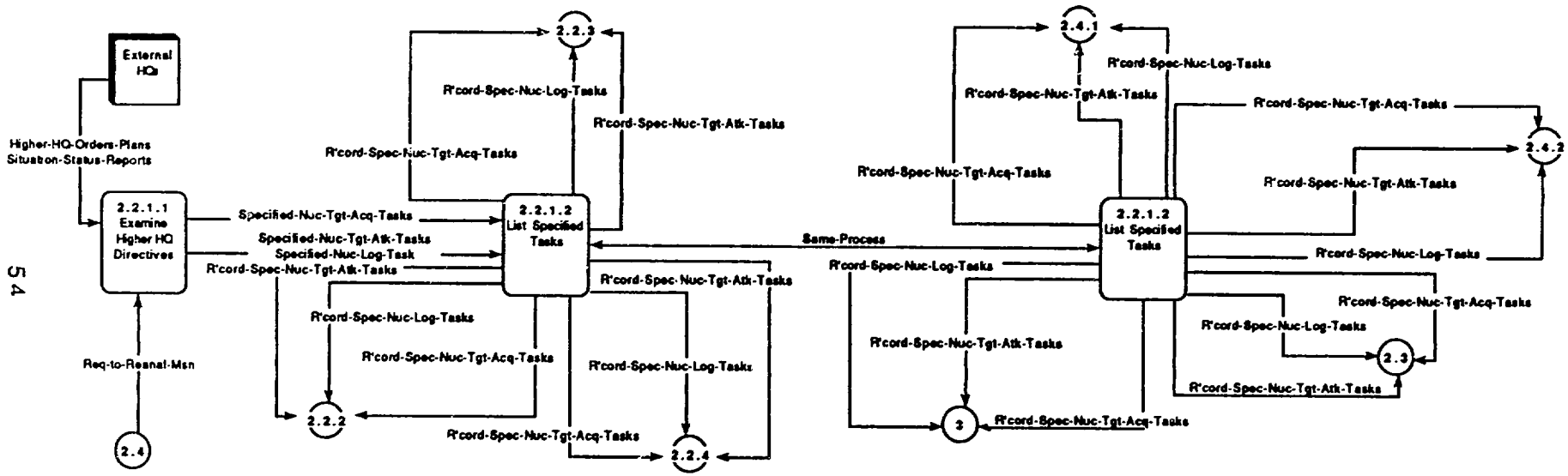
Describe Refugee Control Consideration #2.1.6.2



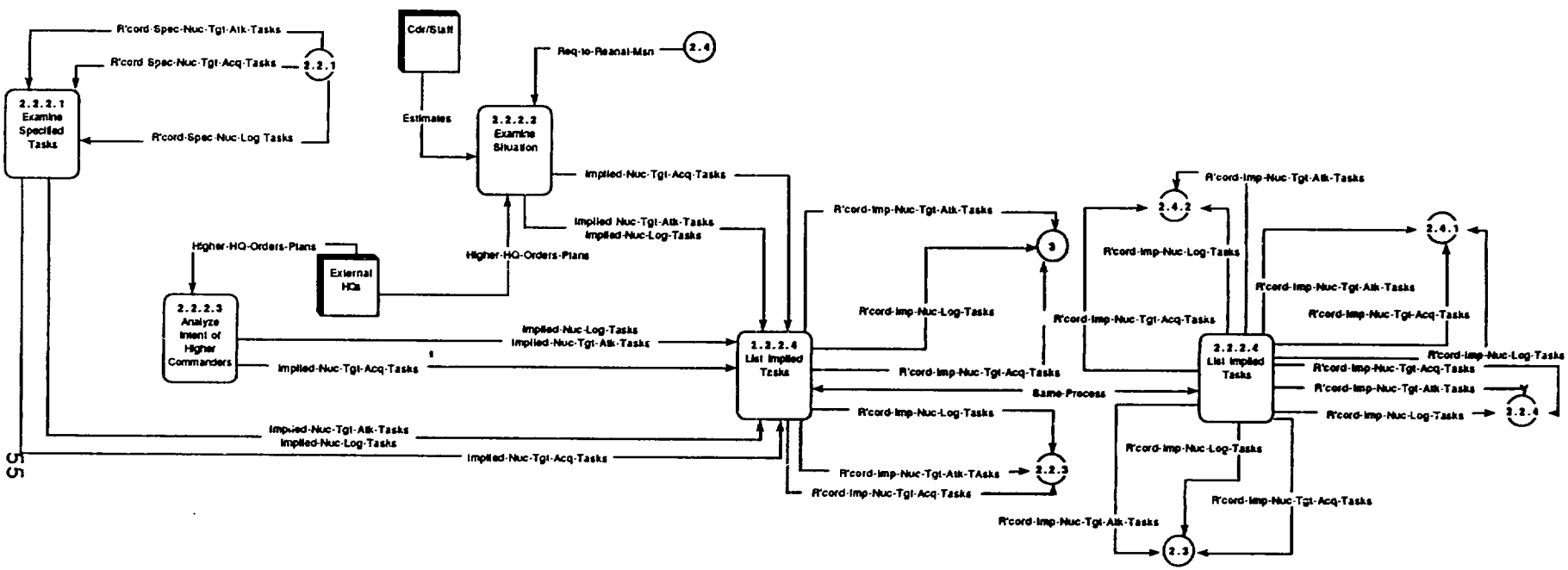
Provide Legal & Political Consideration #2.1.7



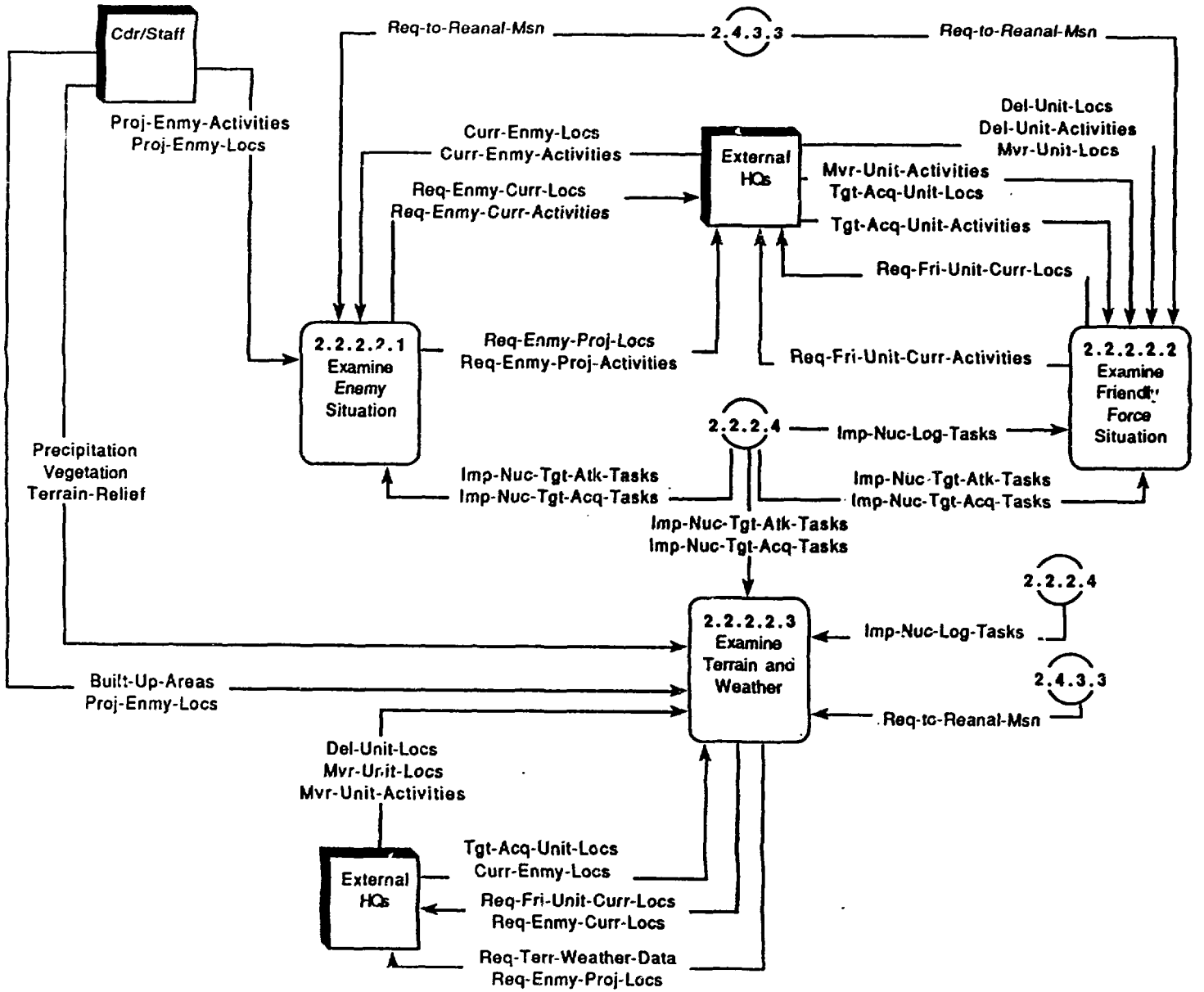
Analyze Mission #2.2



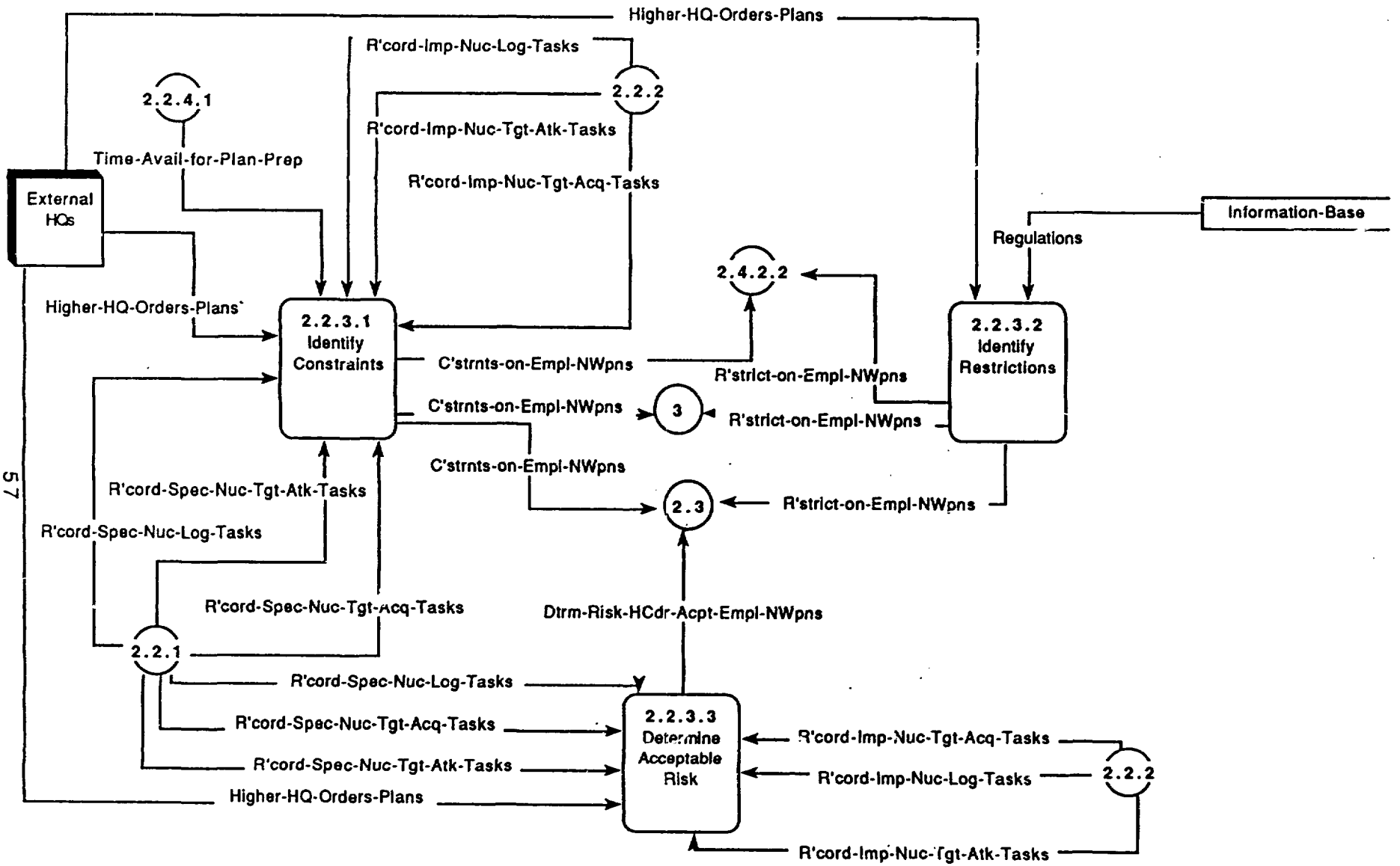
Identify Specified Nuclear Tasks #2.2.1



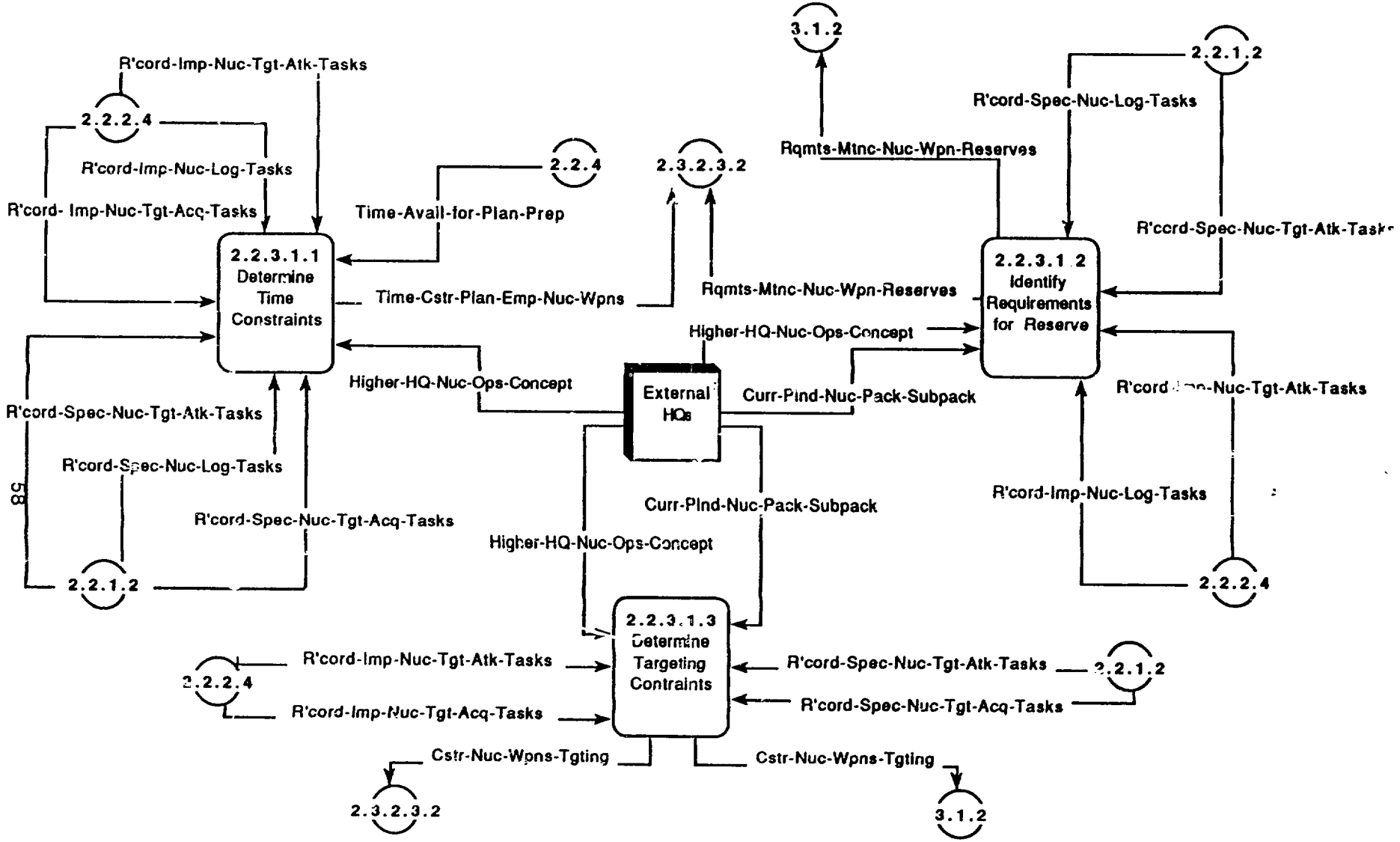
Determine Implied Nuclear Tasks #2.2.2



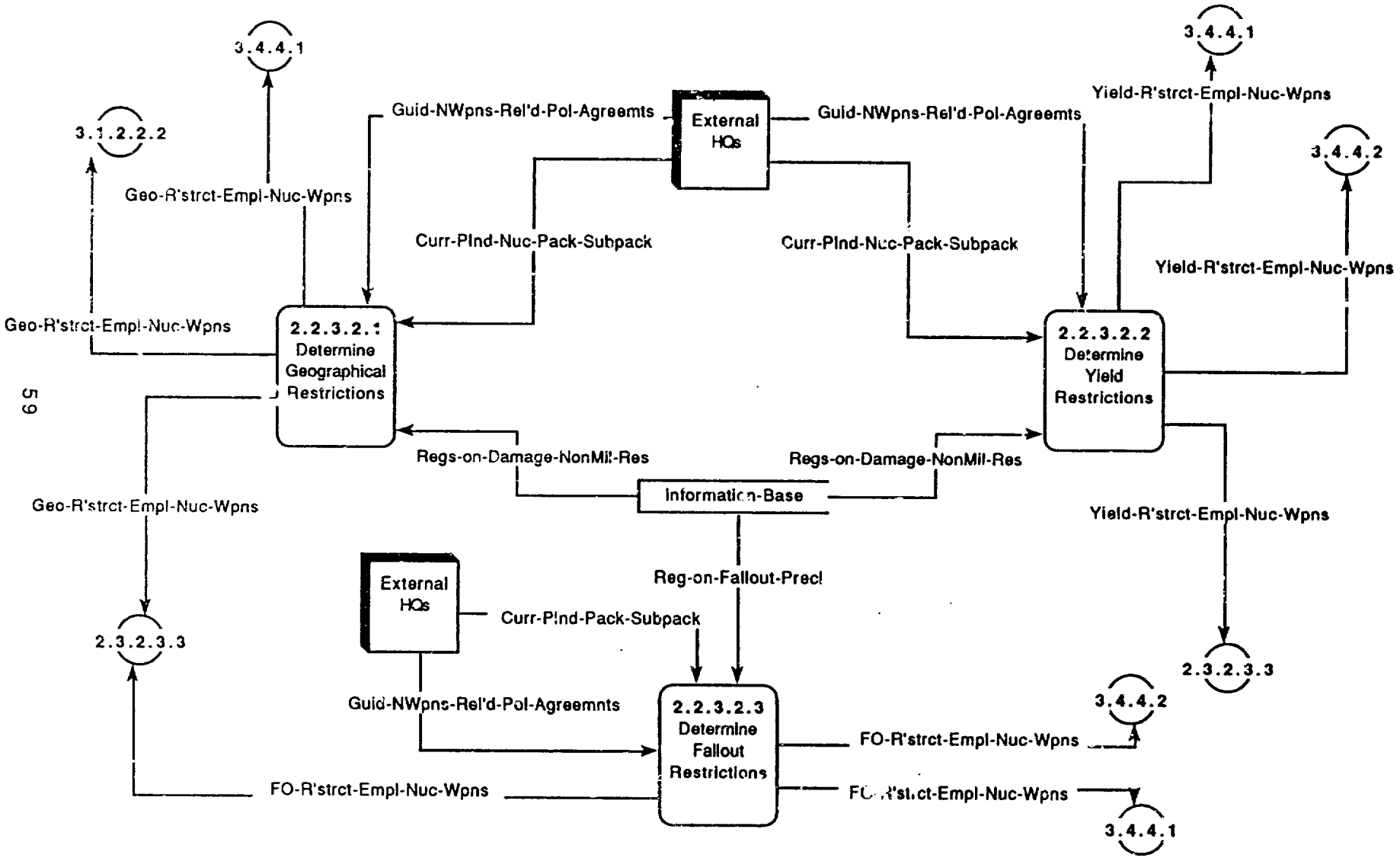
Examine Situation #2.2.2.2



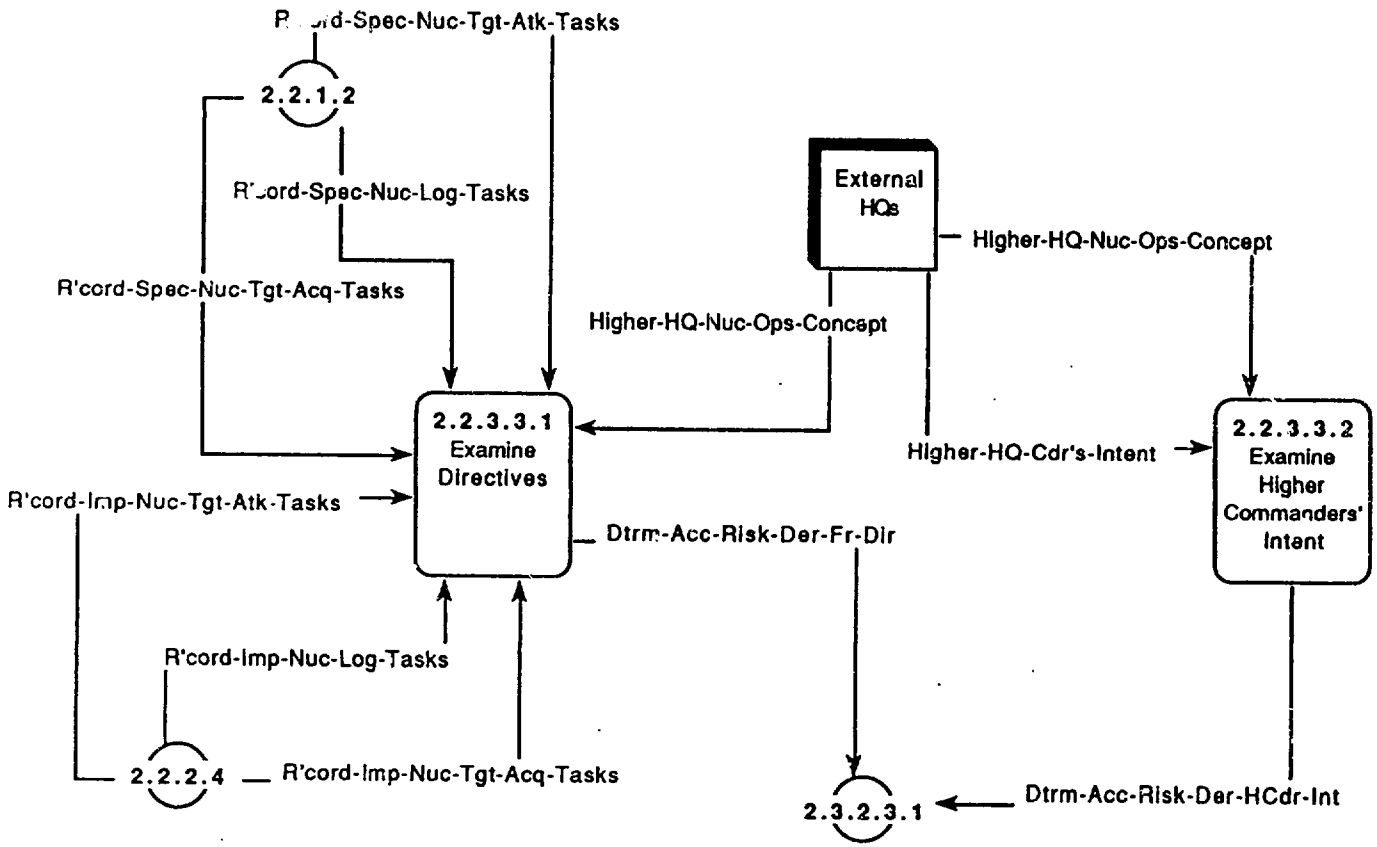
Identify Limitations on Nuclear Employment #2.2.3



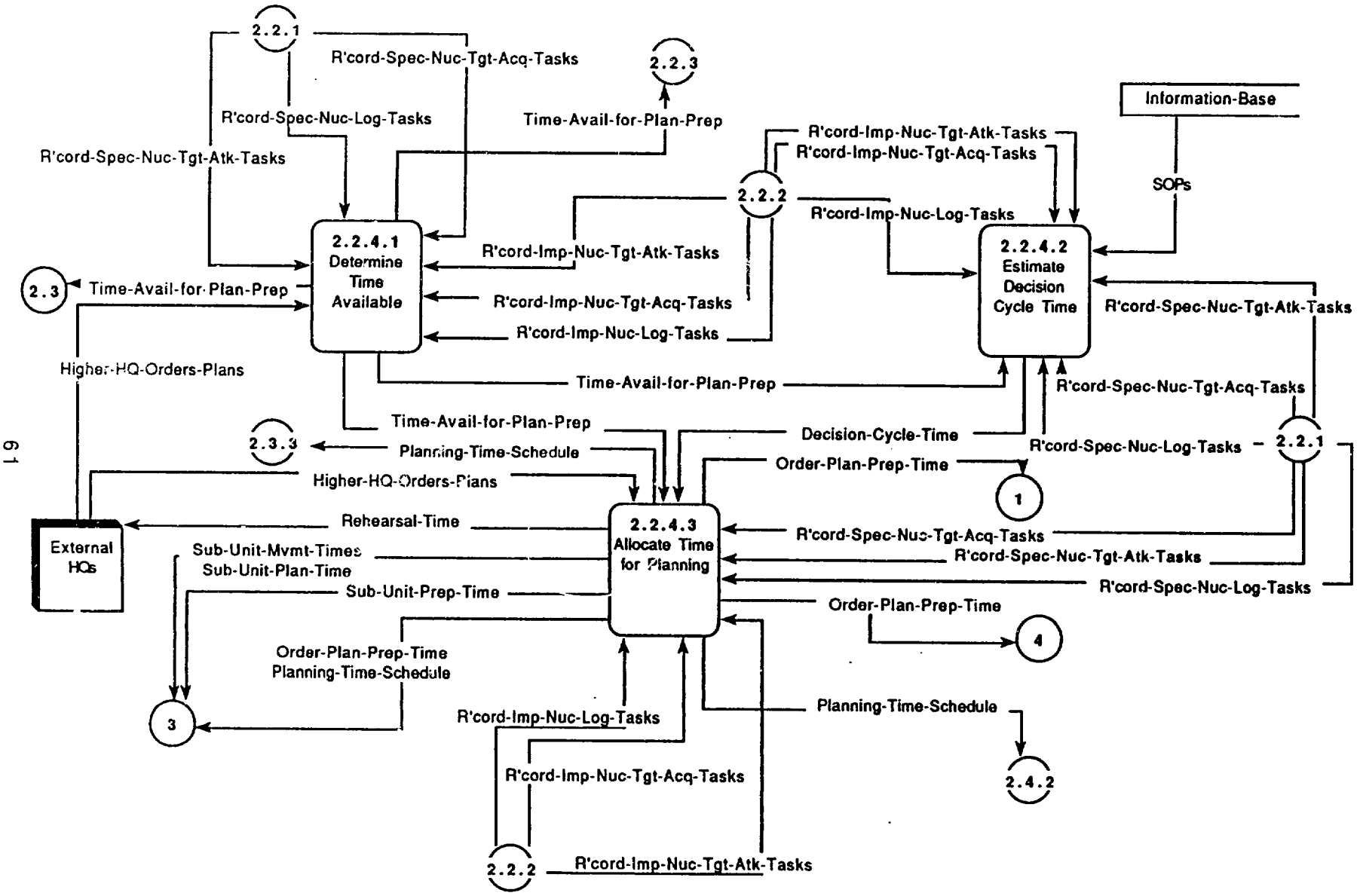
Identify Constraints #2.2.3.1



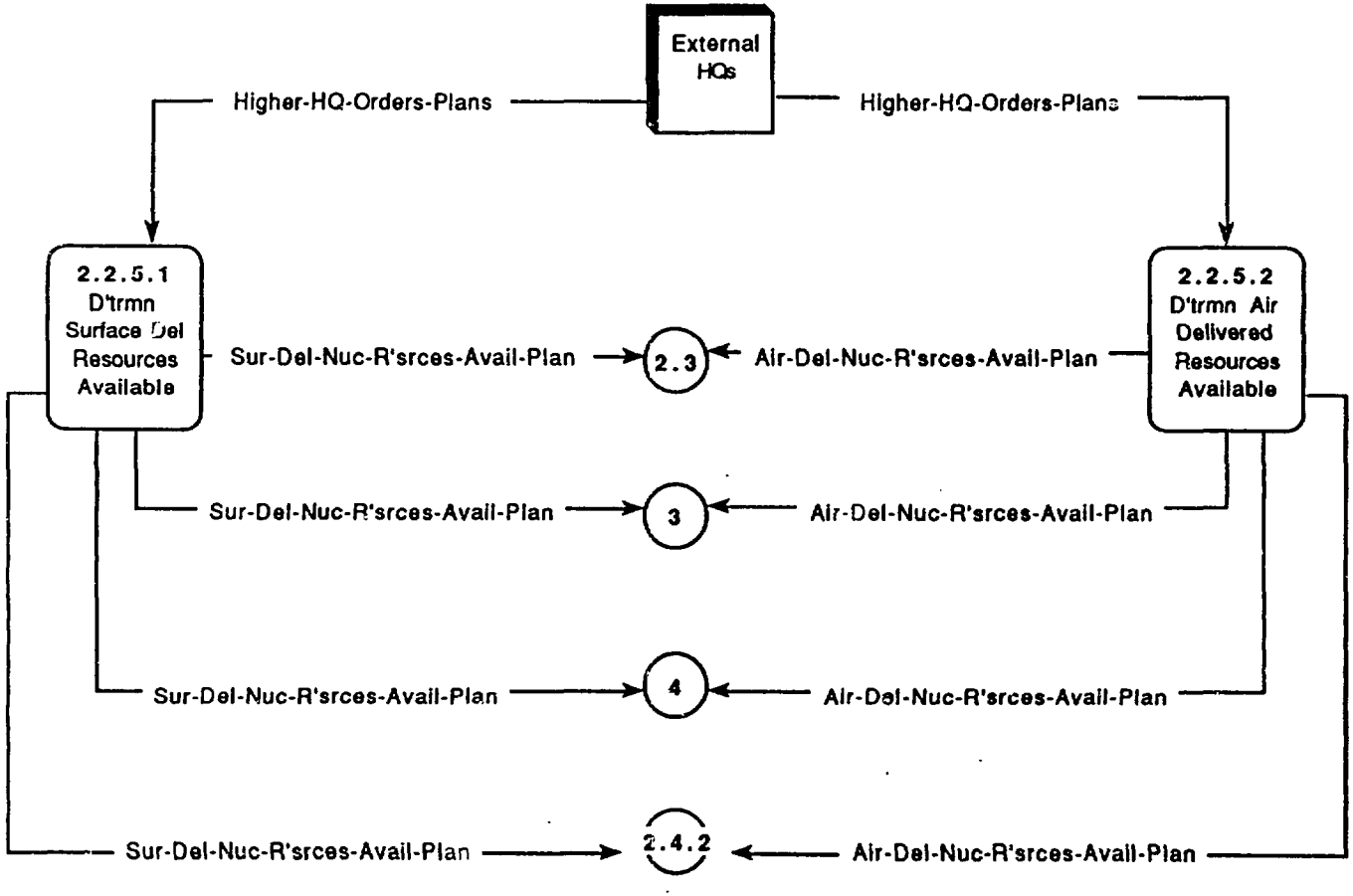
Identify Restrictions #2.2.3.2



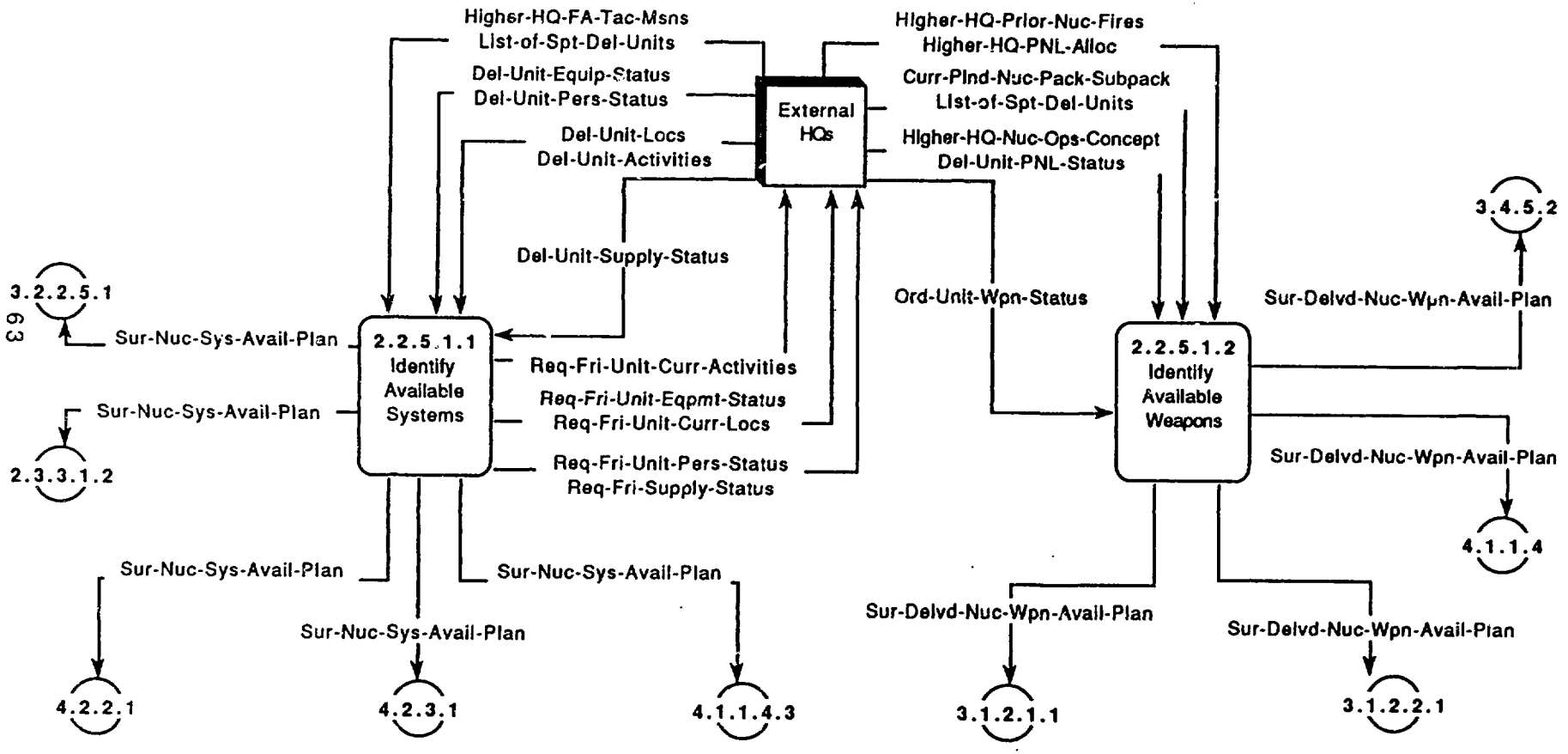
Determine Acceptable Risk #2.2.3.3



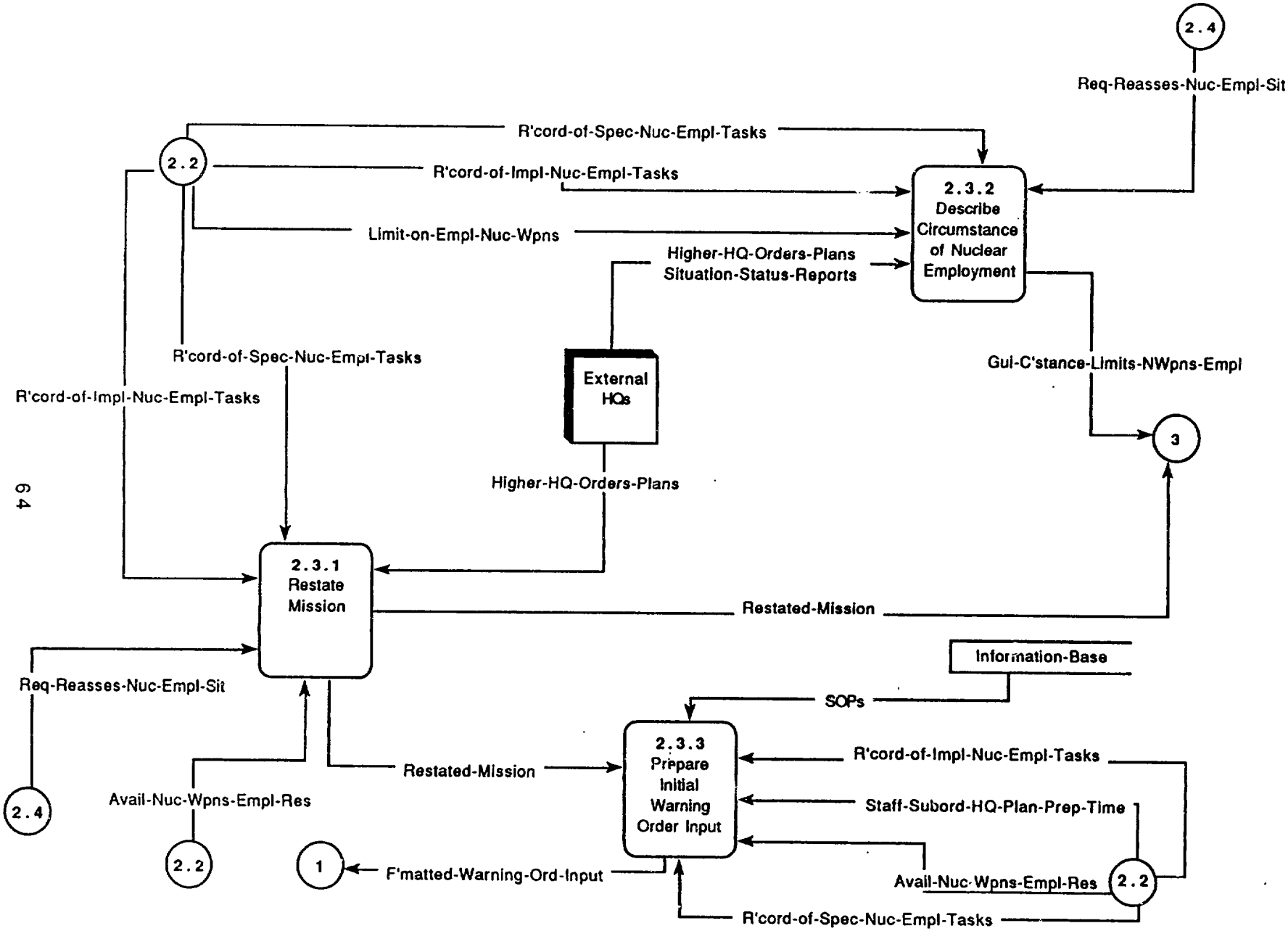
Allot Time Available #2.2.4



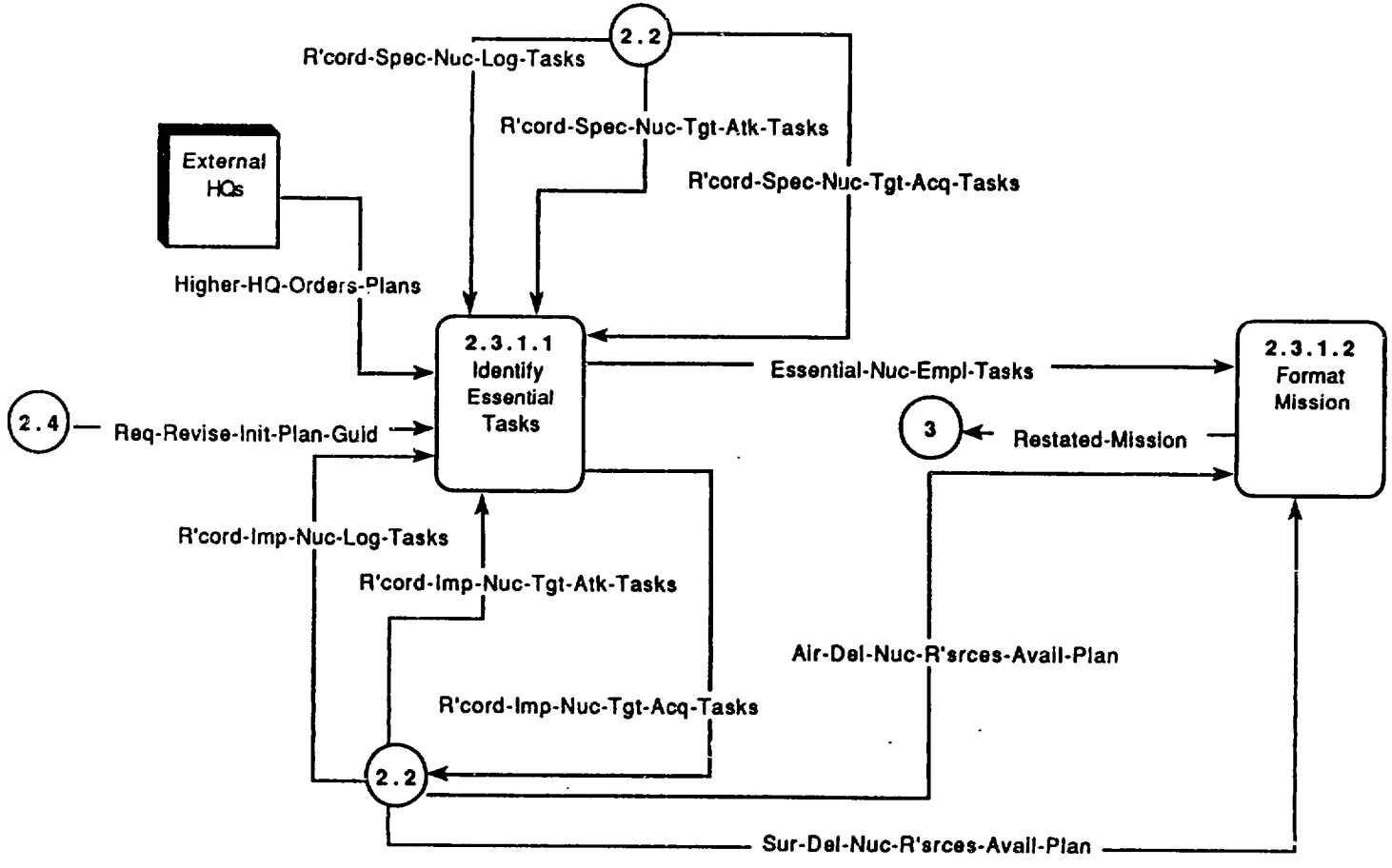
Identify Nuclear Employment Resources #2.2.5



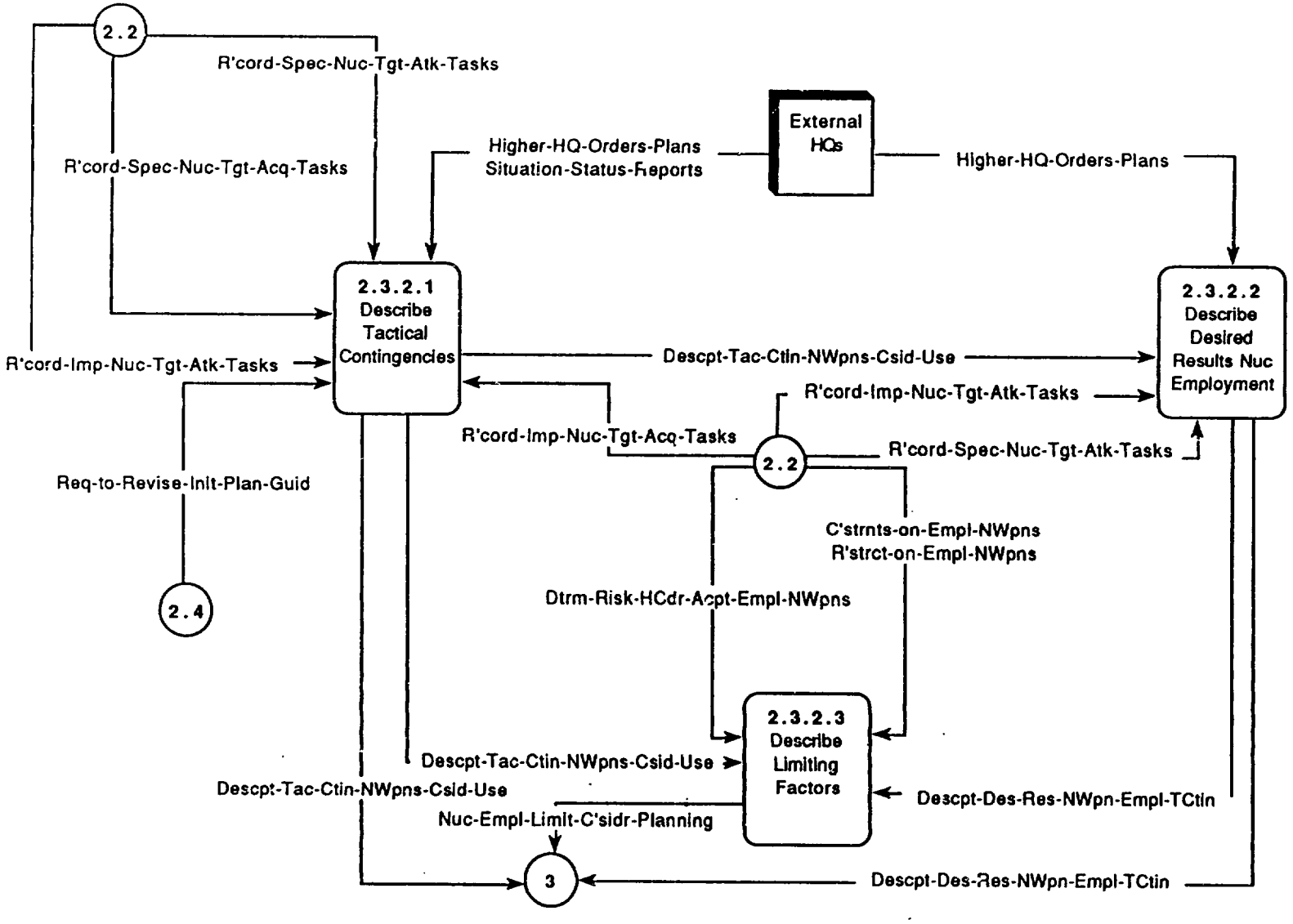
D'trmn Surface Del Resources Available #2.2.5.1



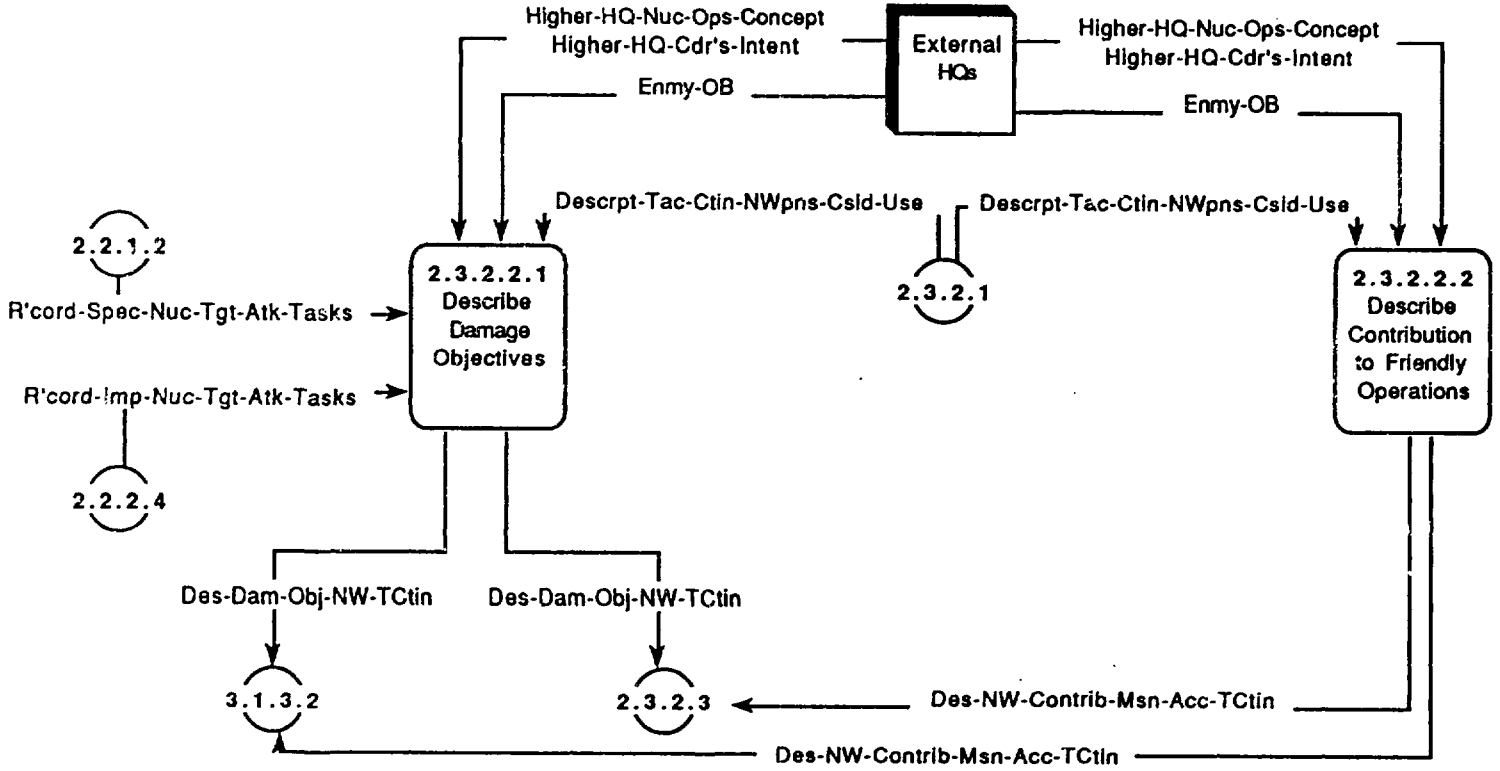
Issue Initial Planning Guidance #2.3



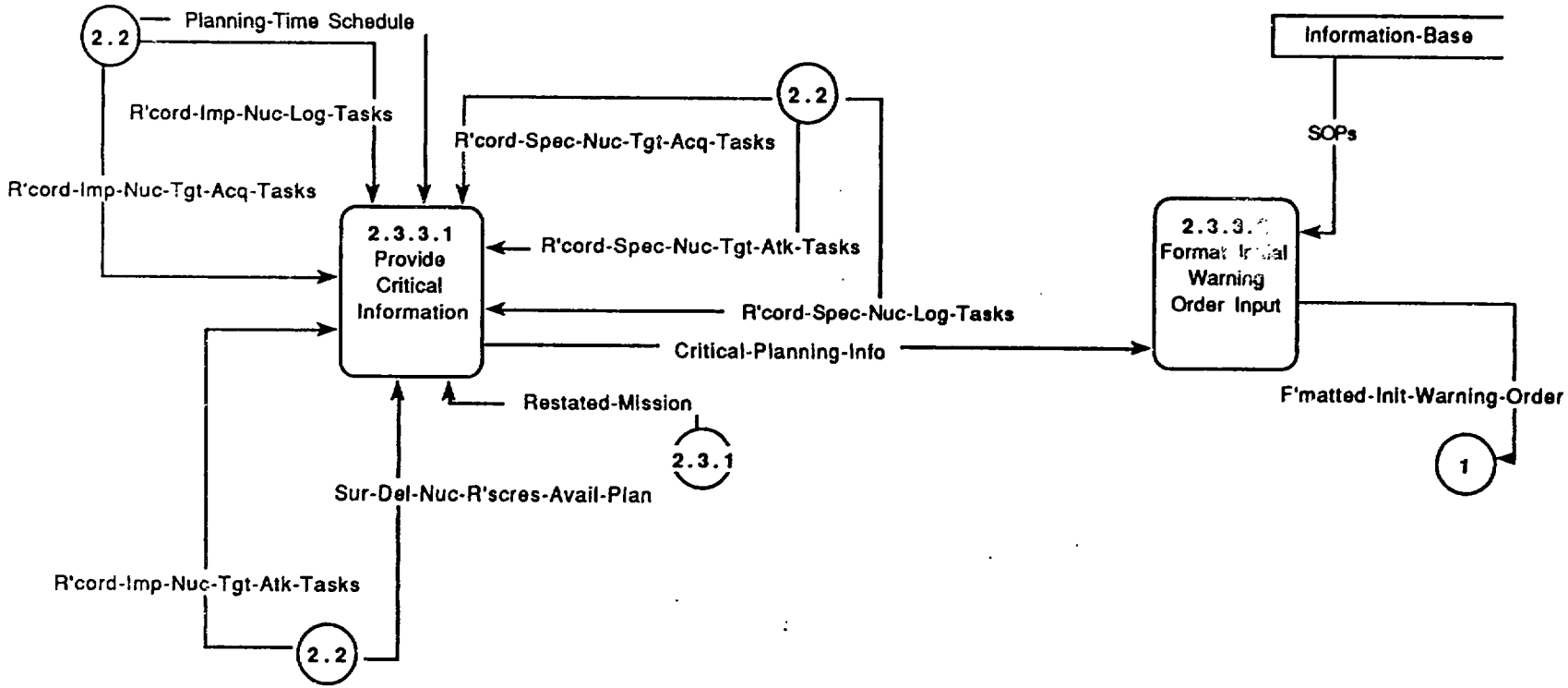
Restate Mission #2.3.1



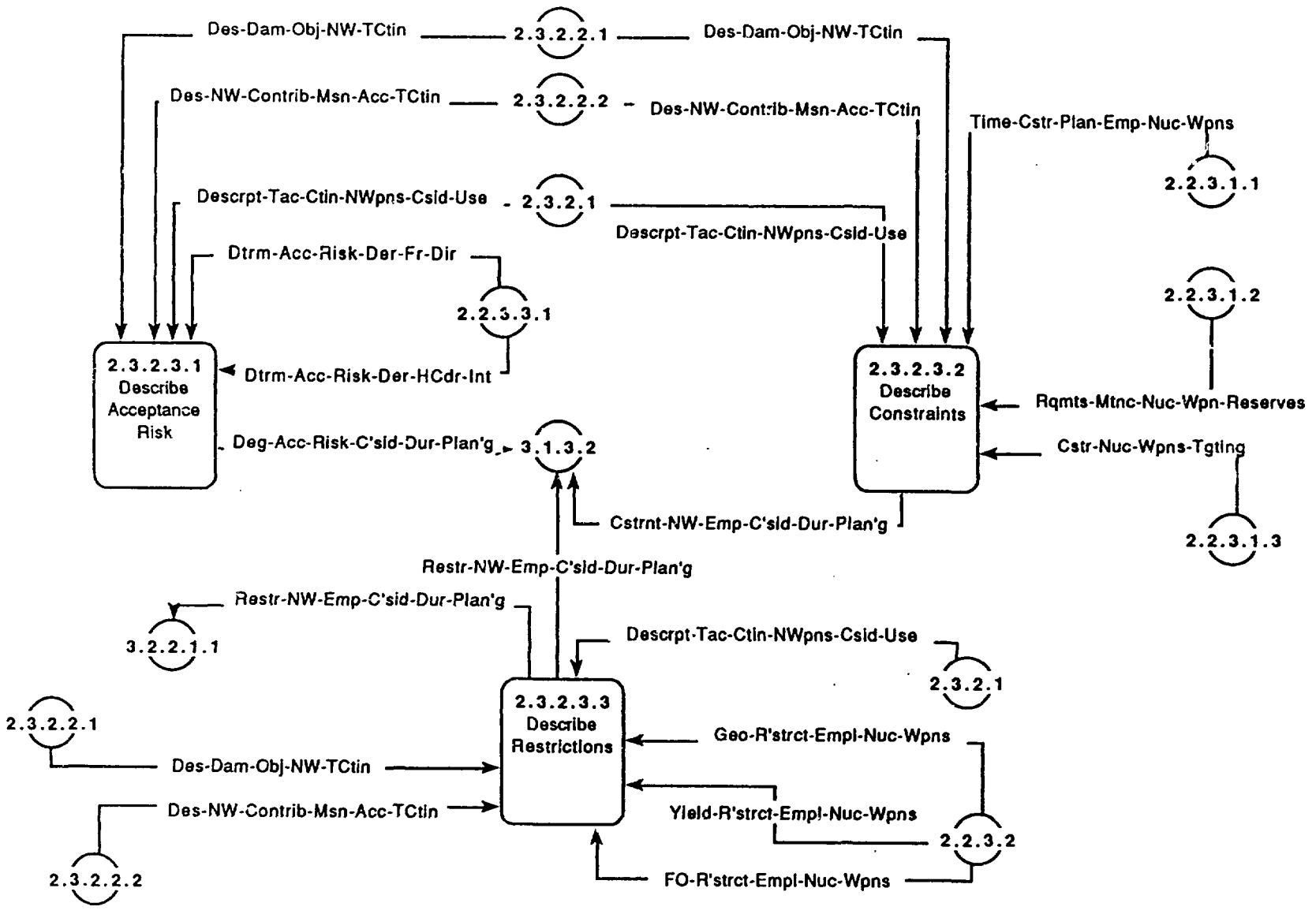
Describe Circumstance of Nuclear Employment #2.3.2



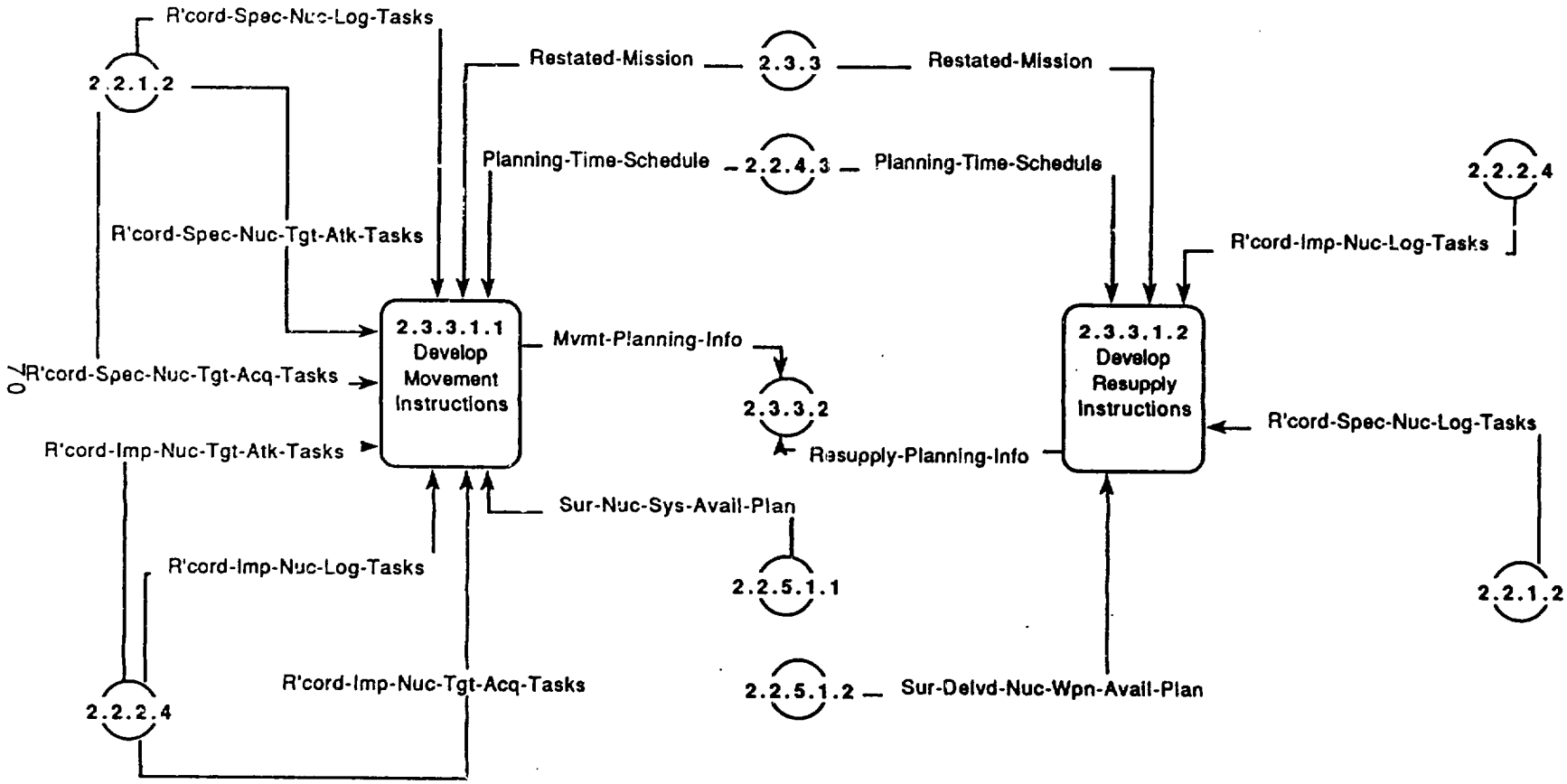
Describe Desired Results Nuc Employment #2.3.2.2



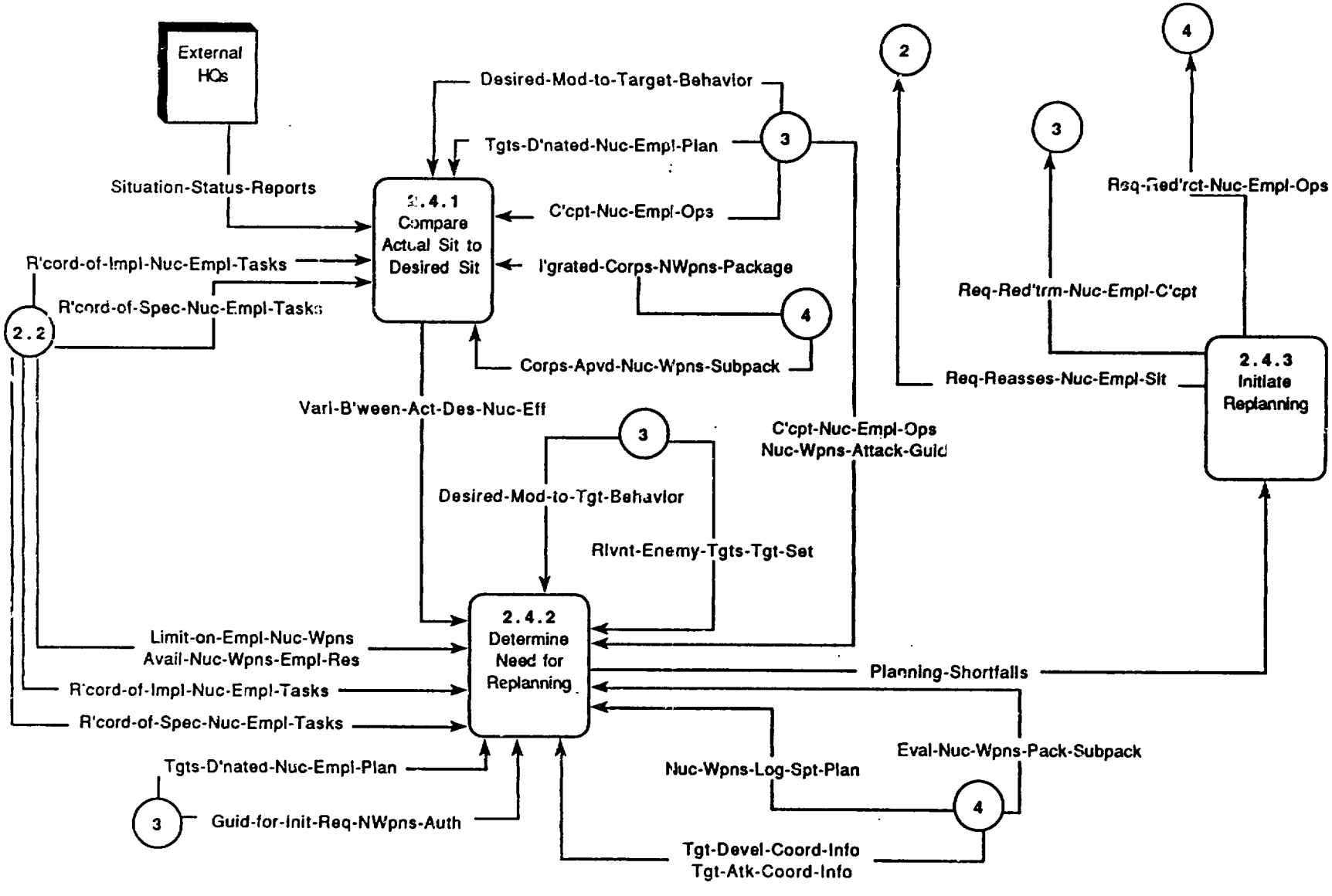
Prepare Initial Warning Order Input #2.3.3



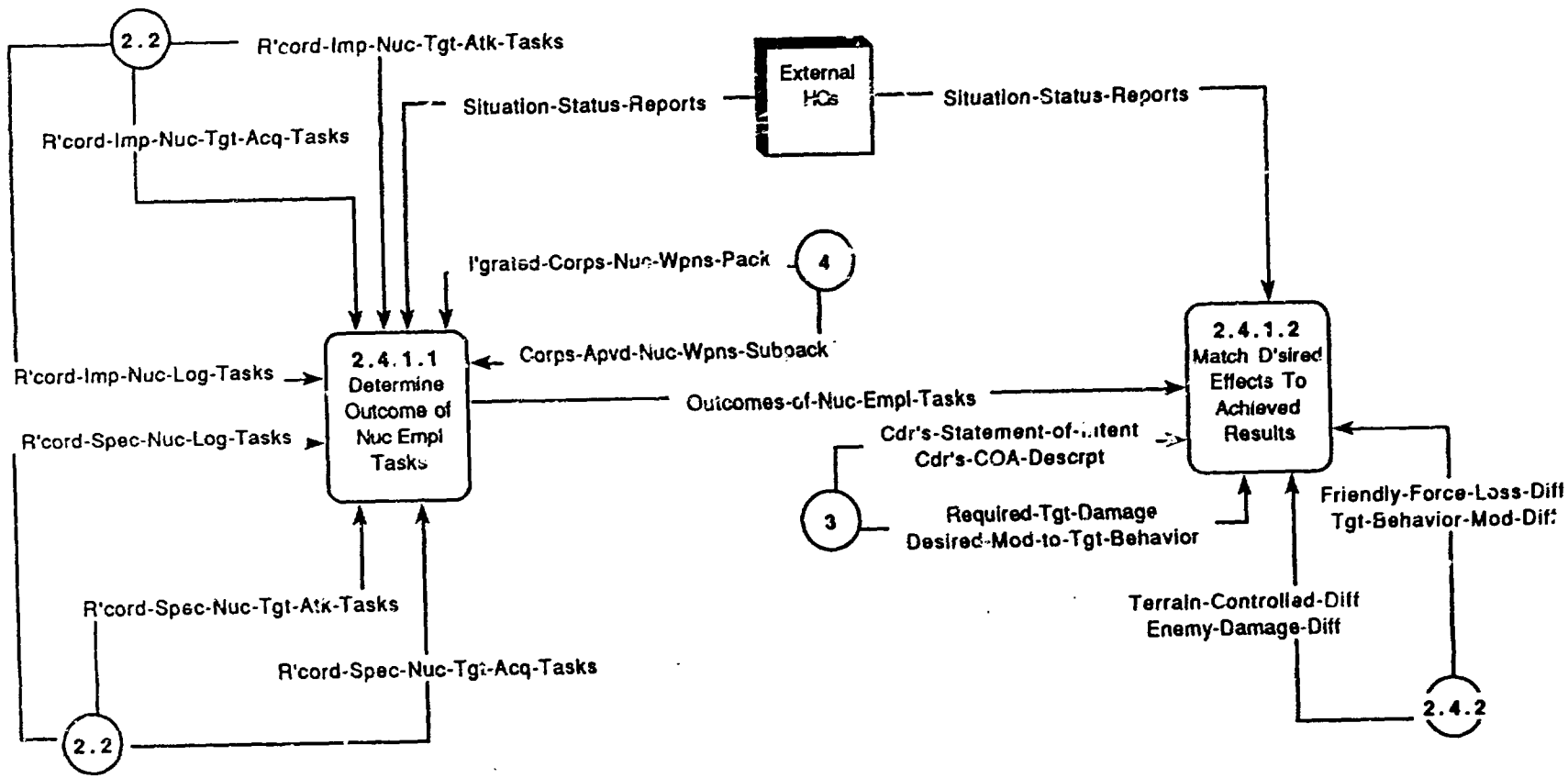
Describe Limiting Factors #2.3.2.3



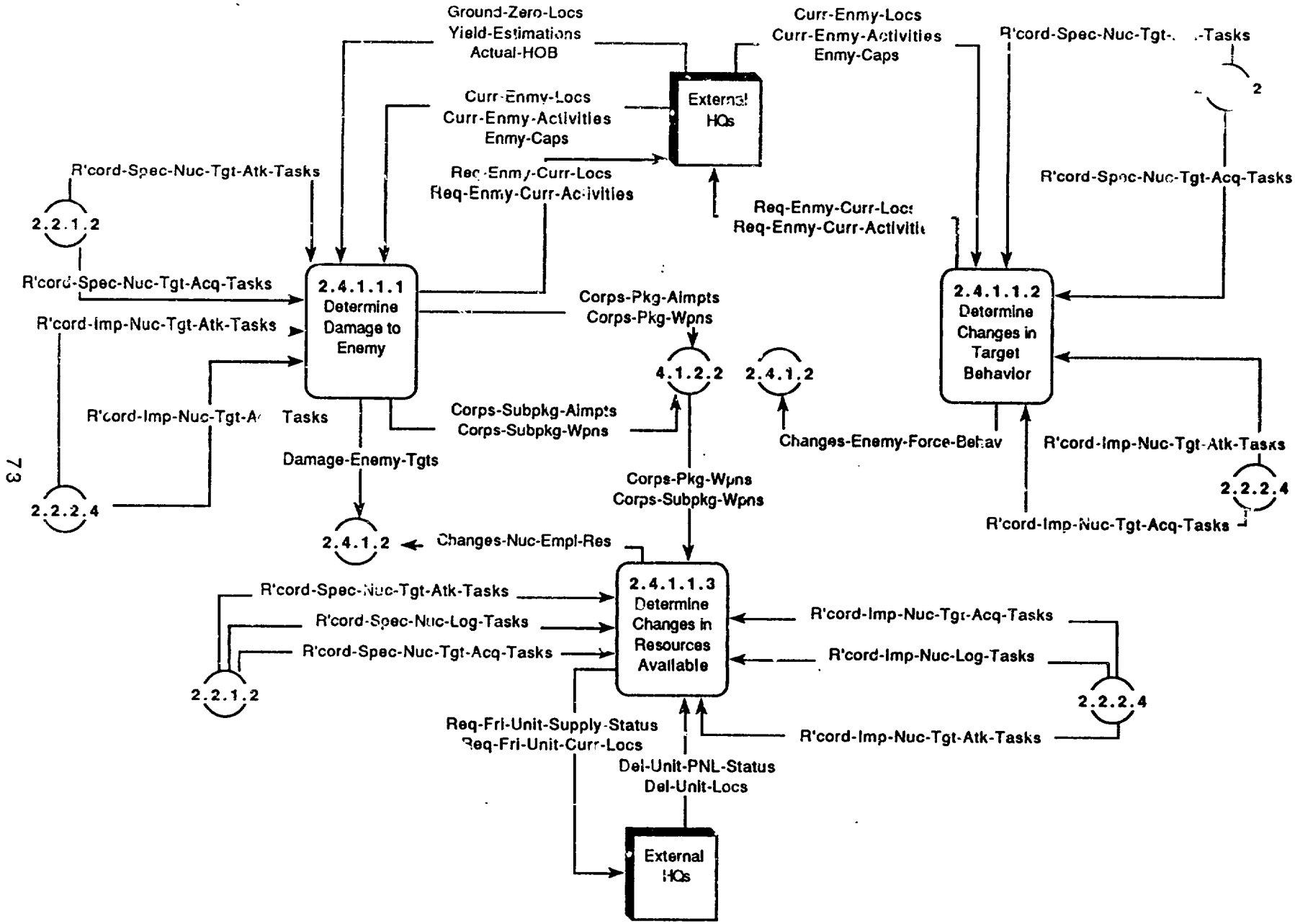
Provide Critical Information #2.3.3.1



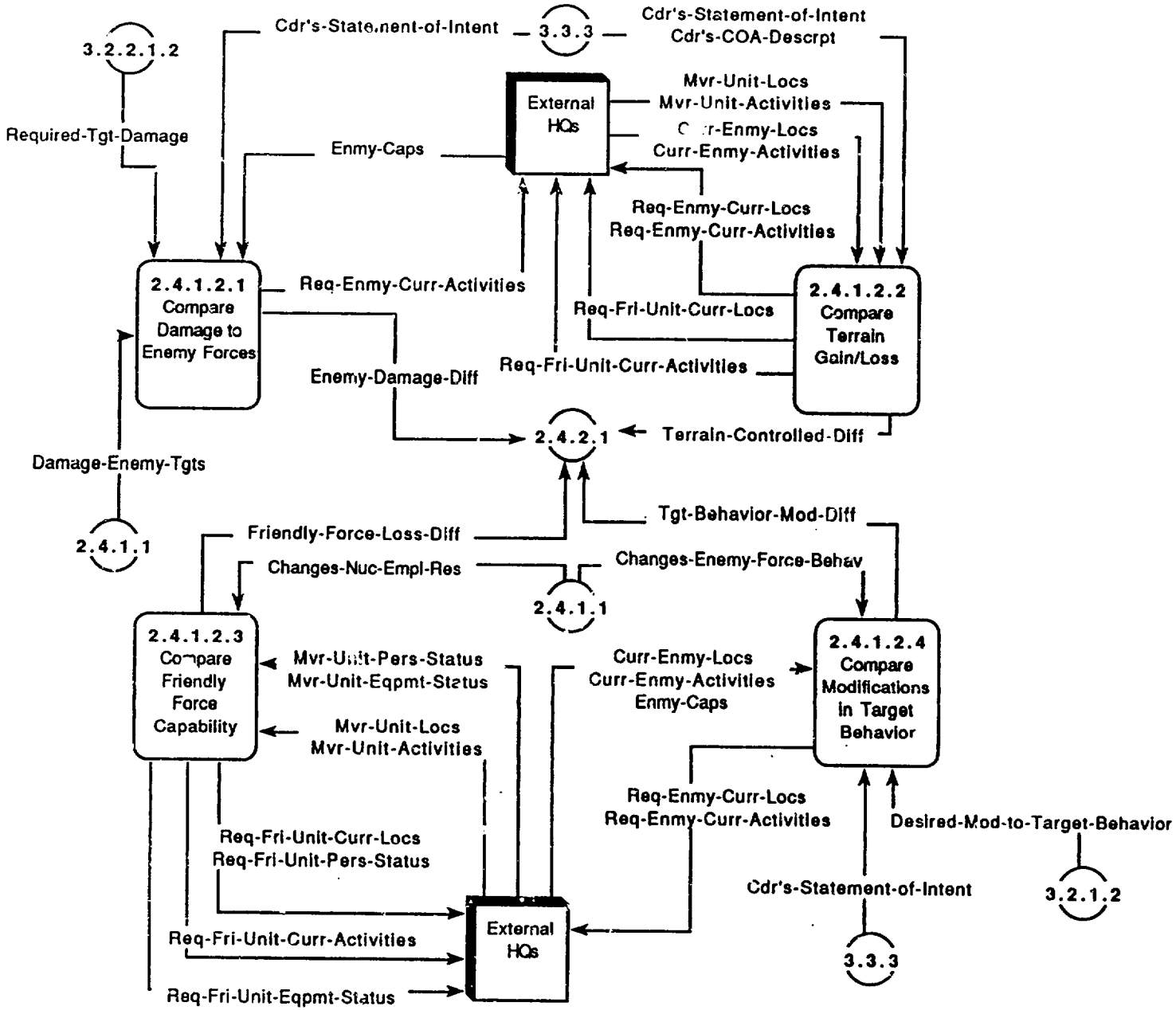
Analyze Need for Change #2.4



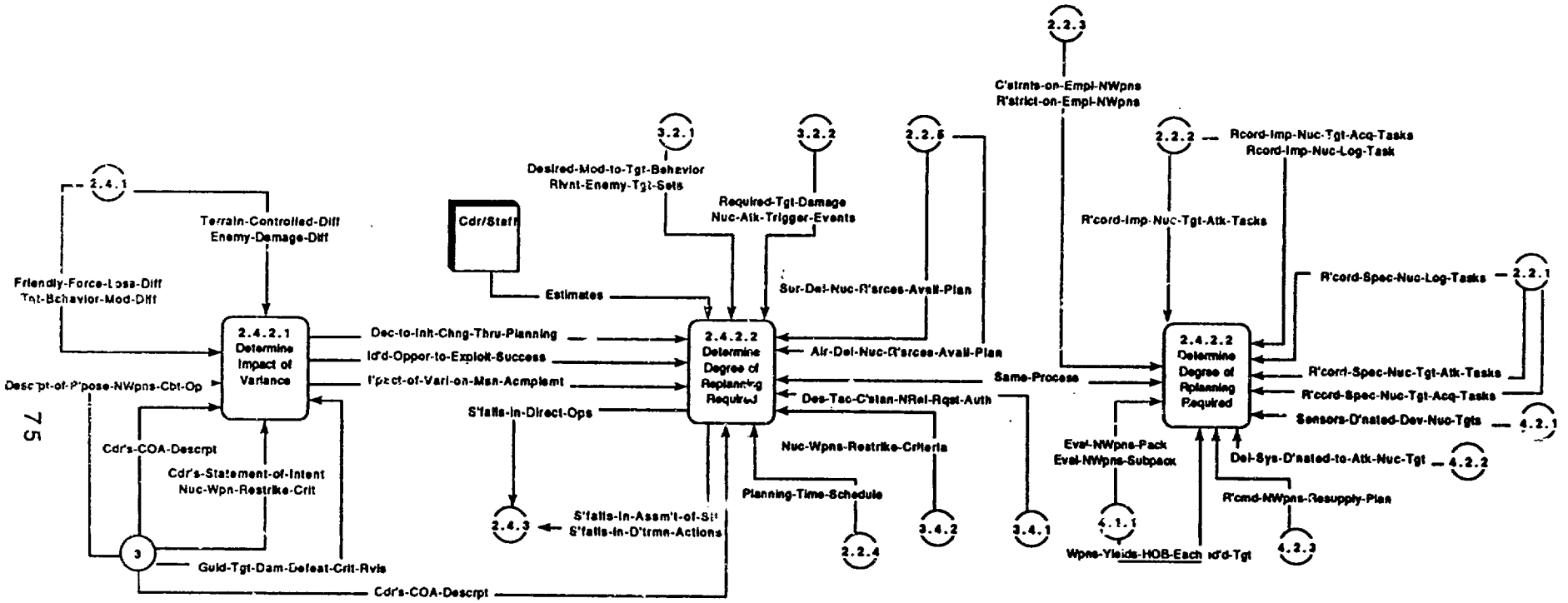
Compare Actual Sit to Desired Sit #2.4.1



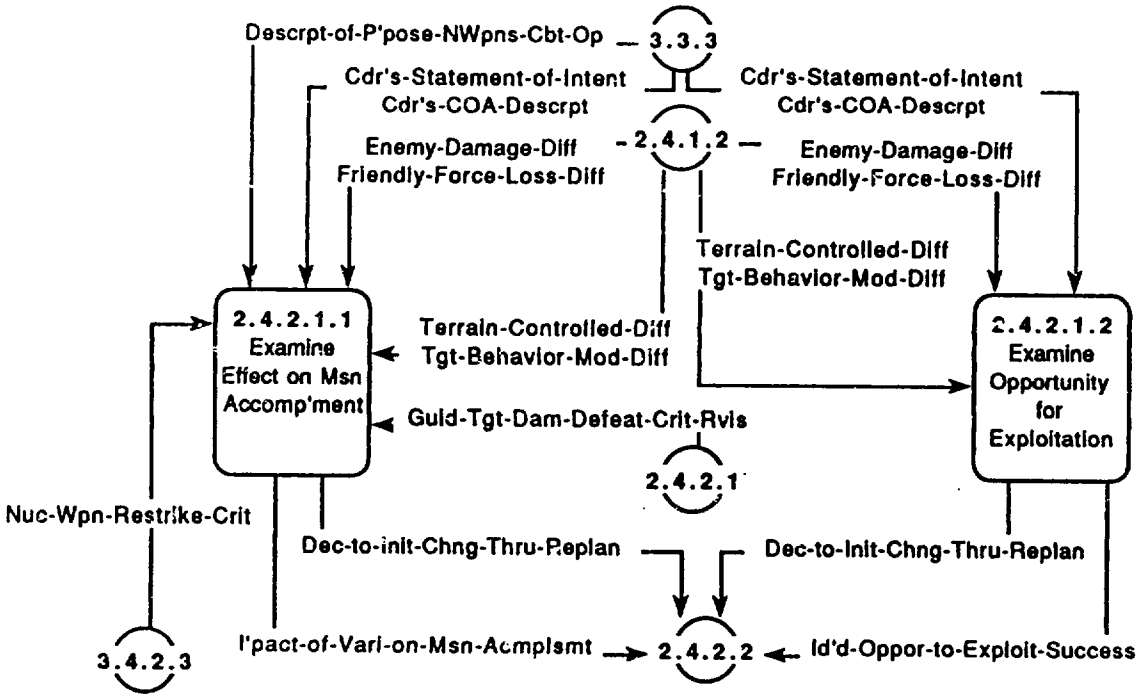
Determine Outcome of Nuc Empl Tasks #2.4.1.1



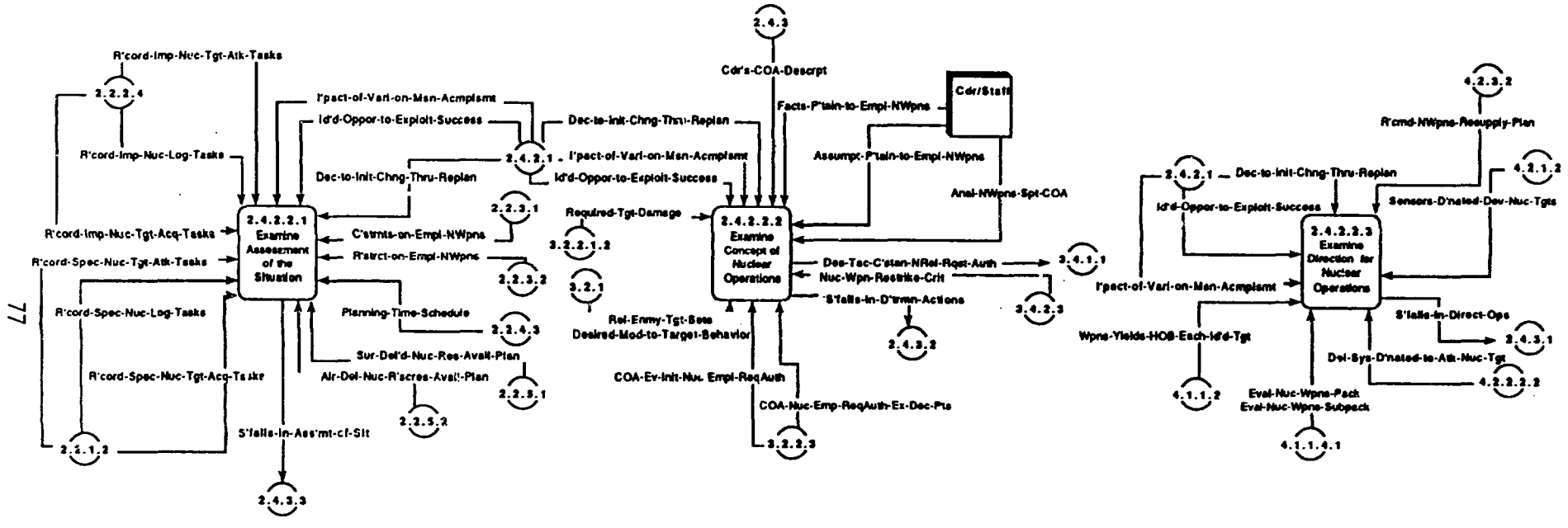
Match D'sired Effects To Achieved Results #2.4.1.2



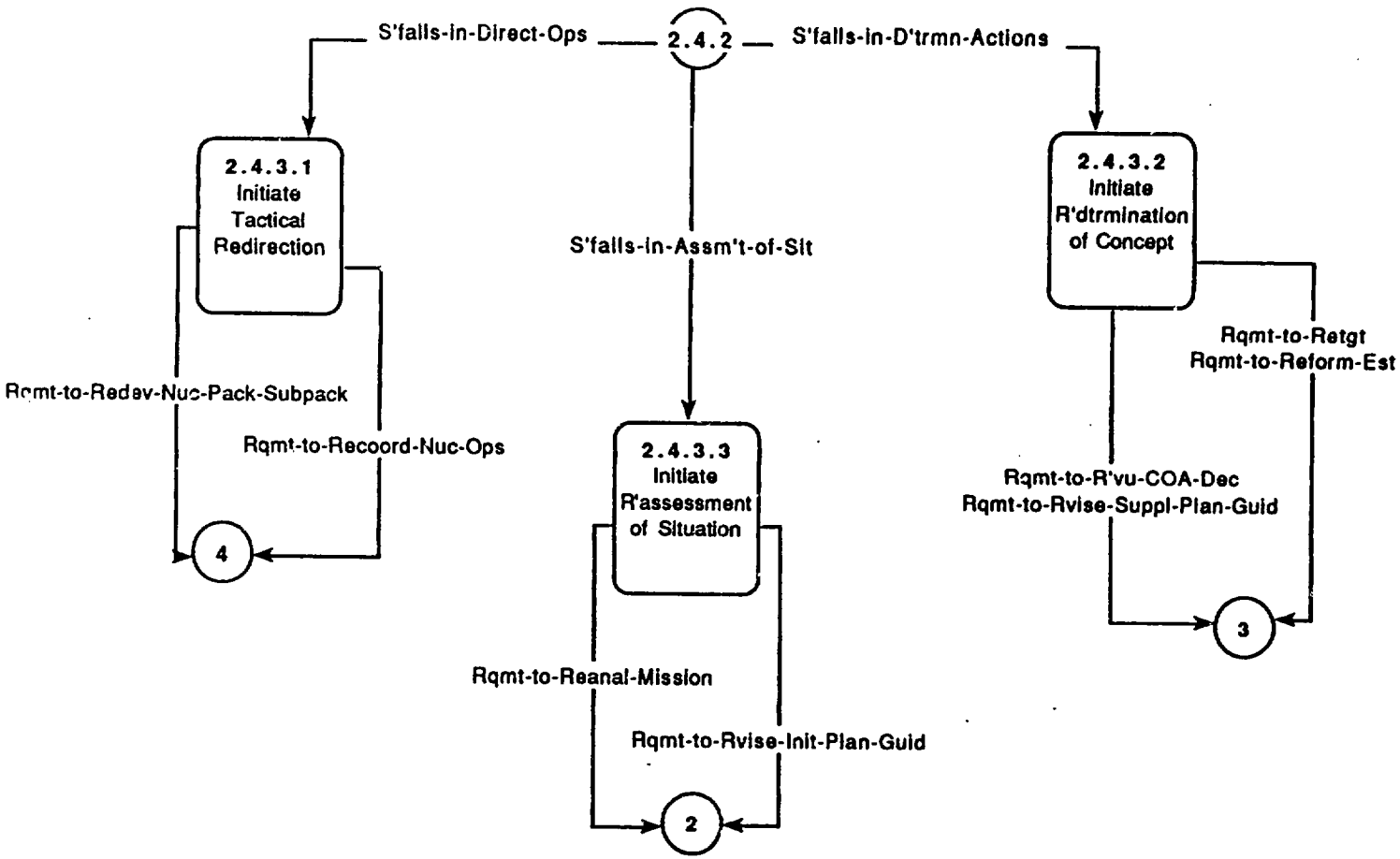
Determine Need for Replanning #2.4.2



Determine Impact of Variance #2.4.2.1

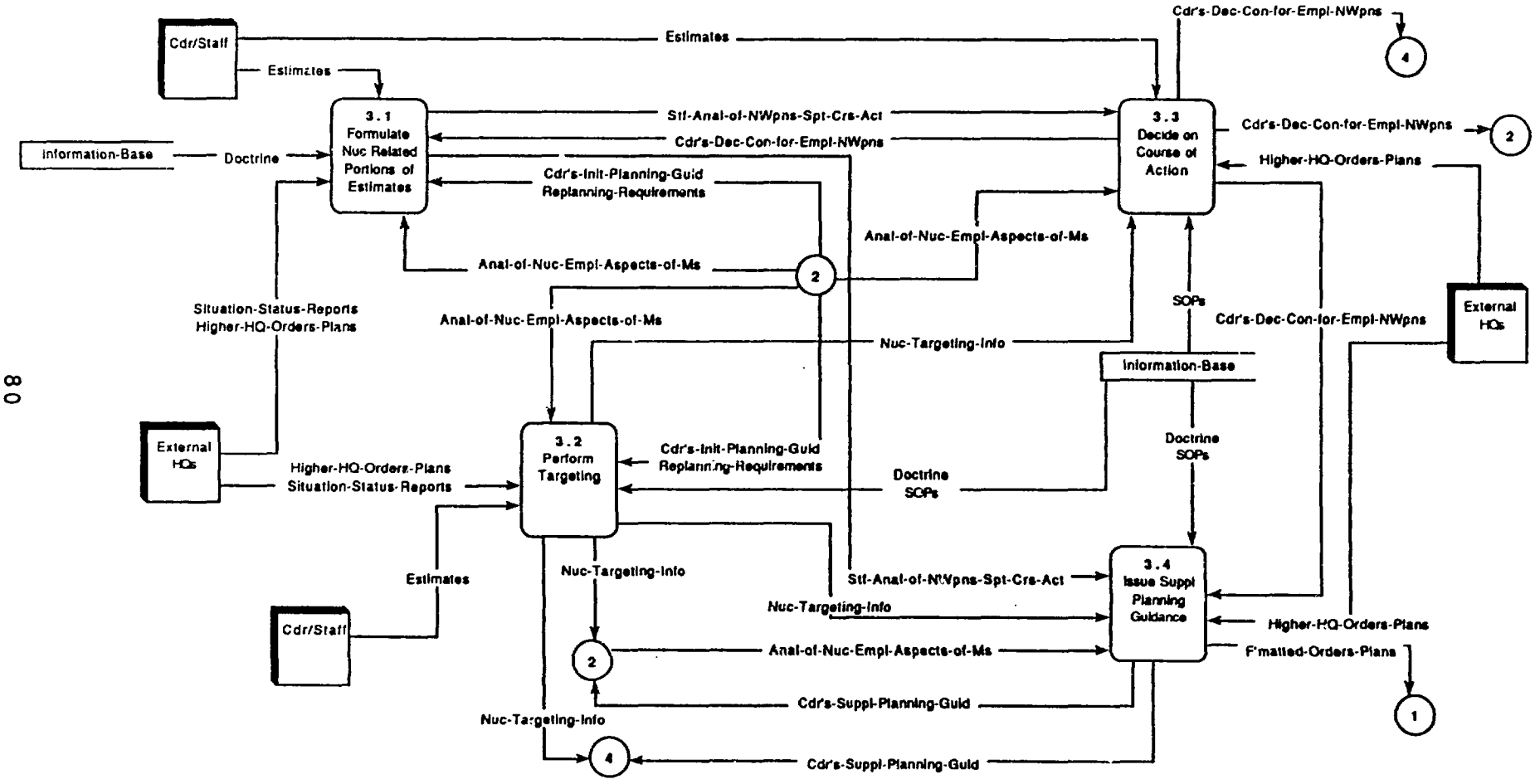


Determine Degree of Replanning Required #2.4.2.2

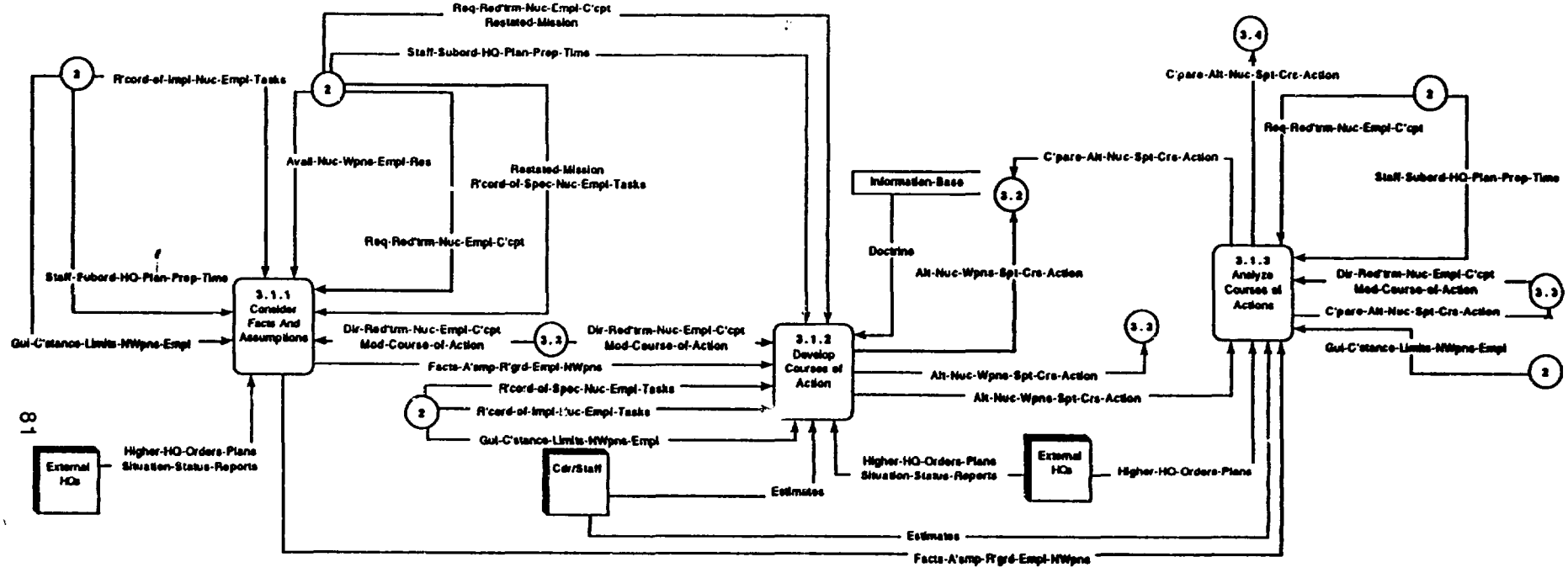


Initiate Replanning #2.4.3

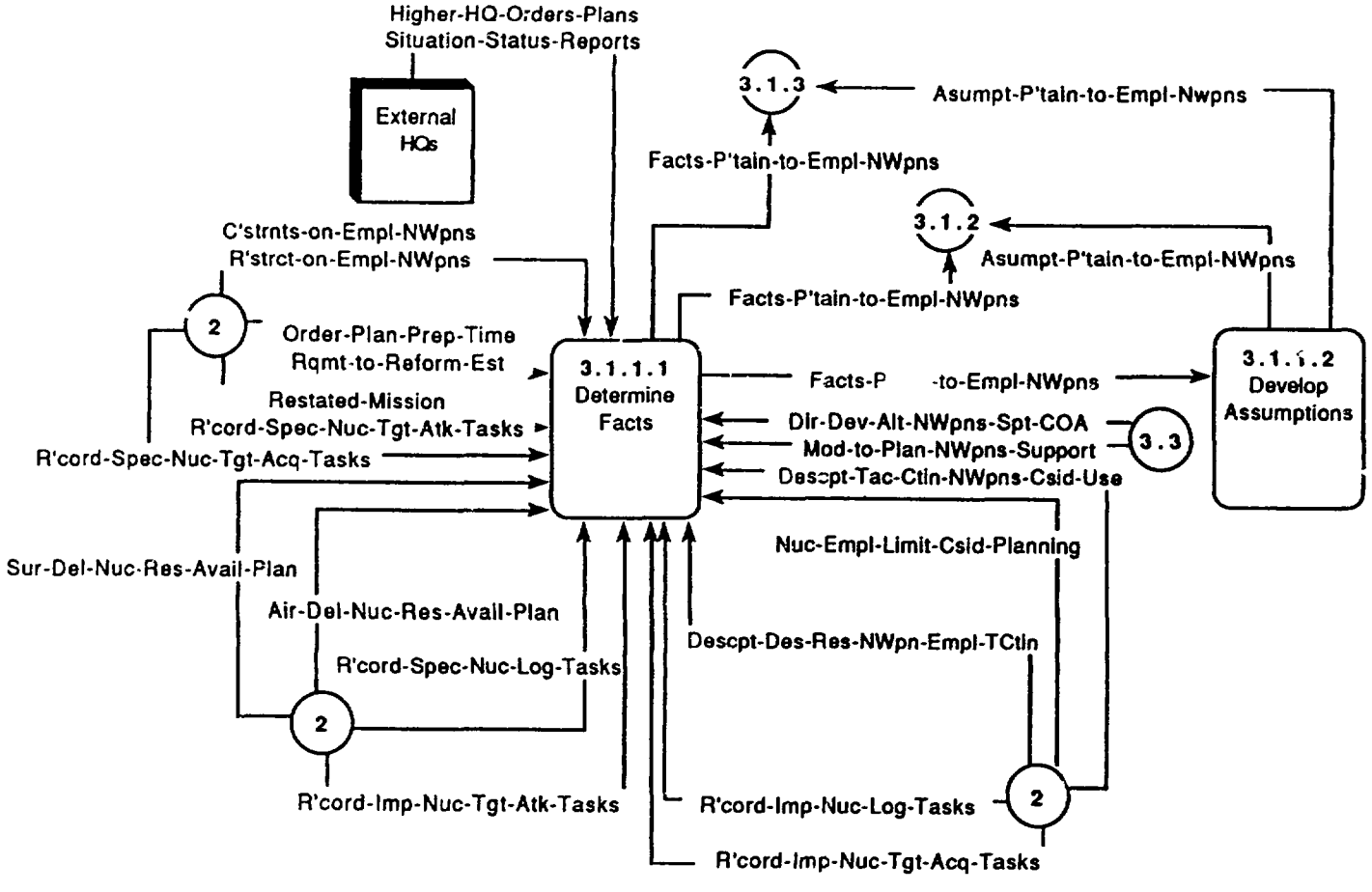
DETERMINE CONCEPT OF NUCLEAR EMPLOYMENT (3.1 THROUGH 3.4.5.2.3)



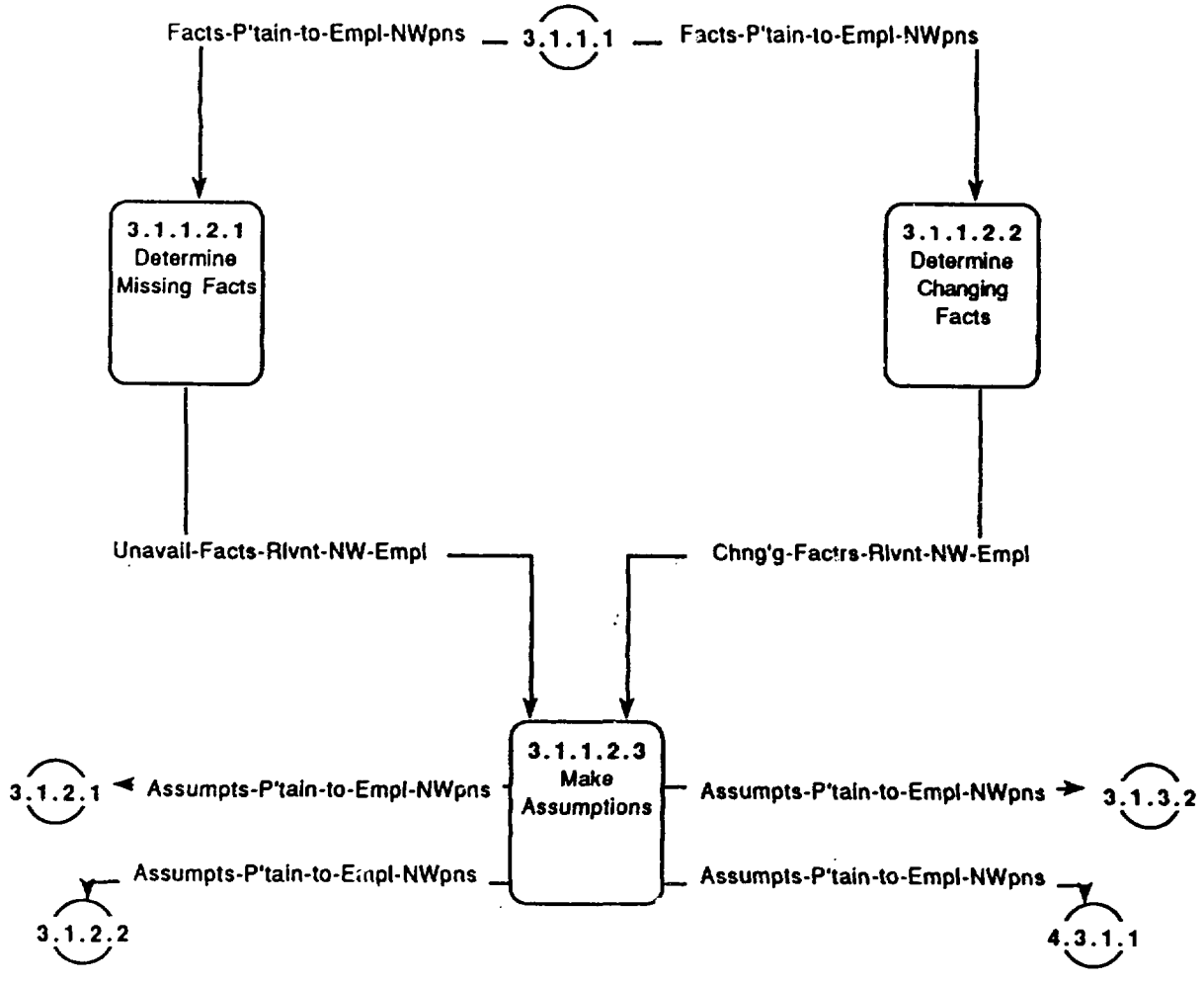
Determine Concept of Nuclear Employment #3



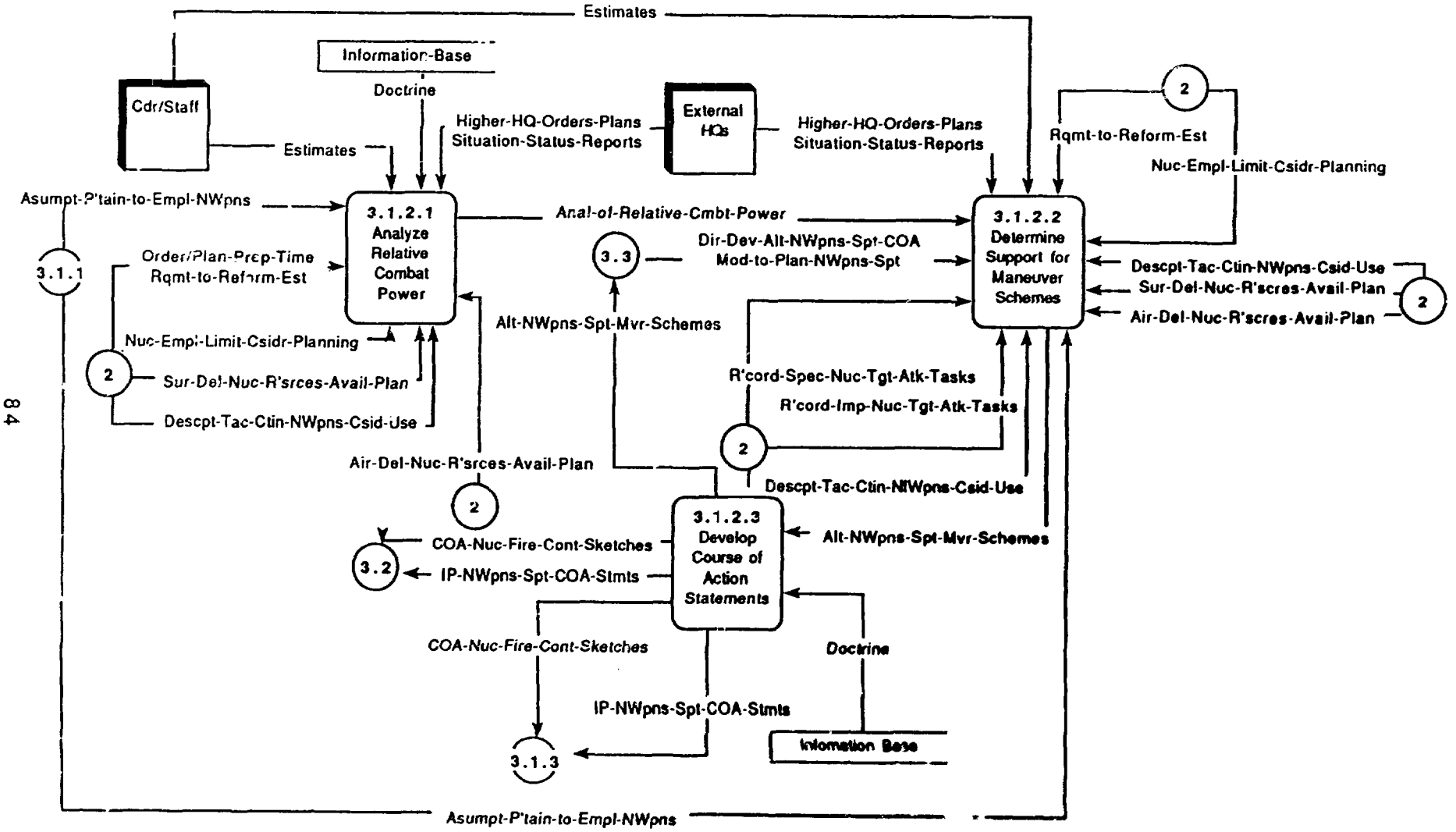
Formulate Nuc Related Portions of Estimates #3.1



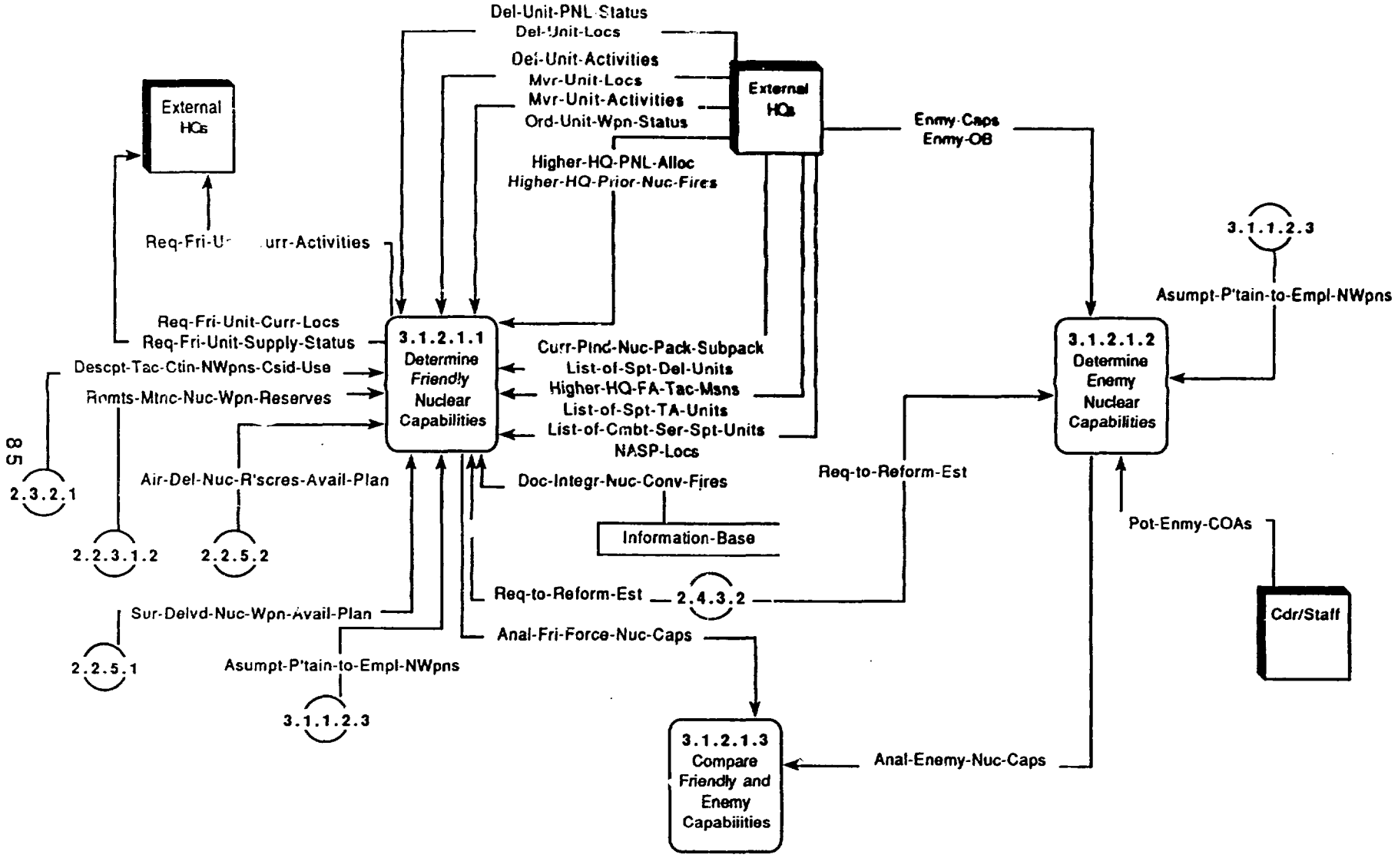
Consider Facts And Assumptions #3.1.1



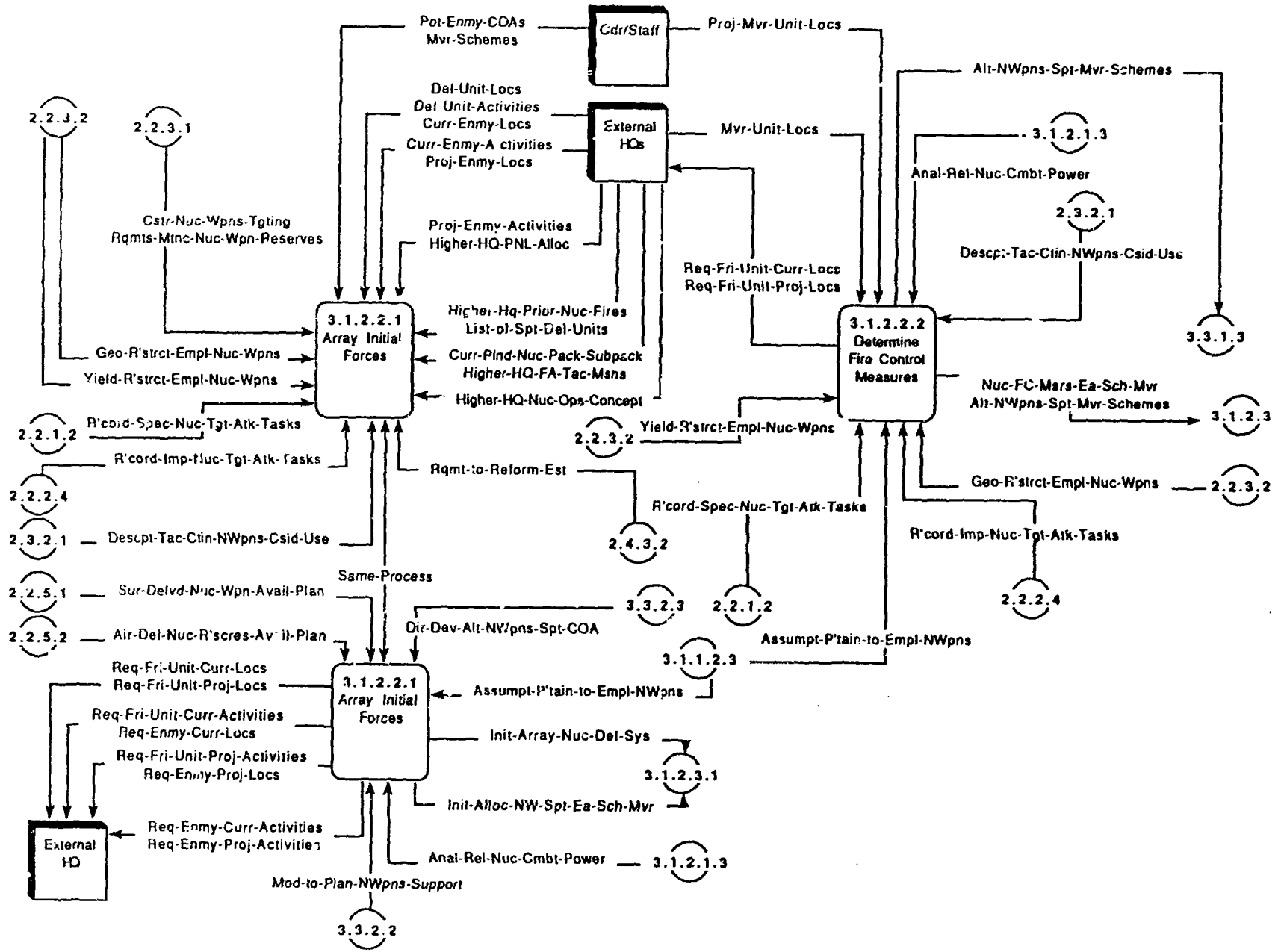
Develop Assumptions #3.1.1.2



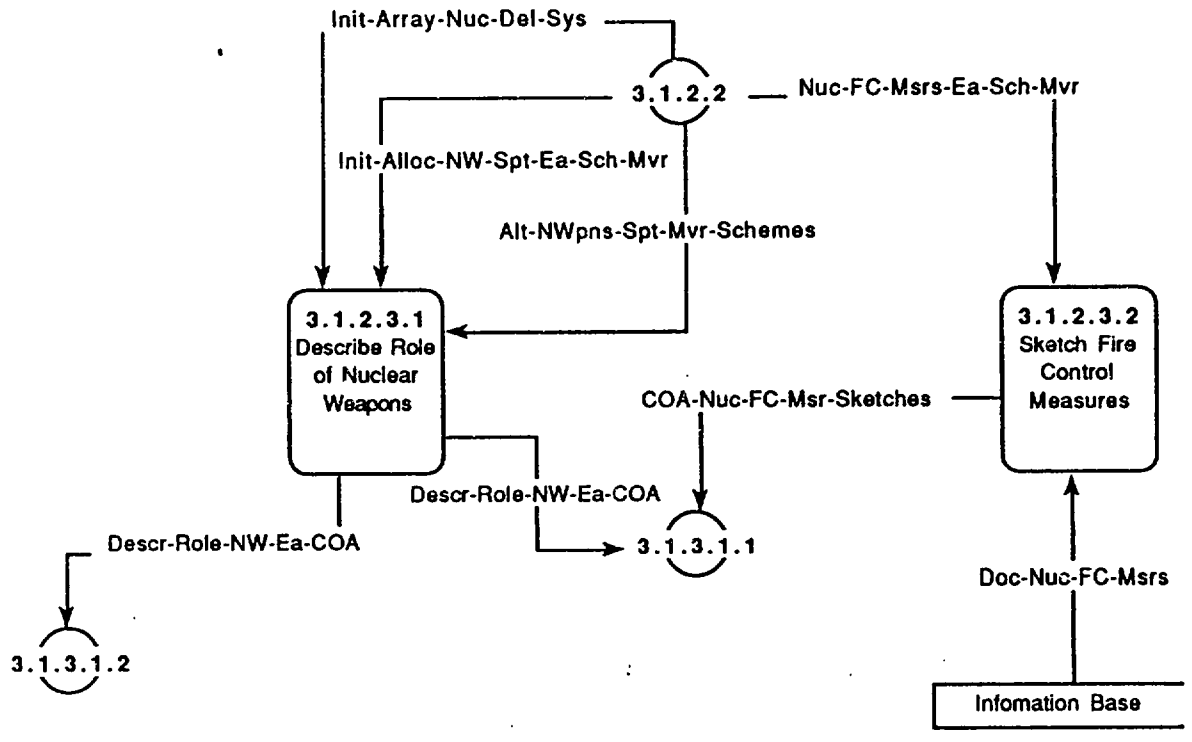
Develop Courses of Action 3.1.2



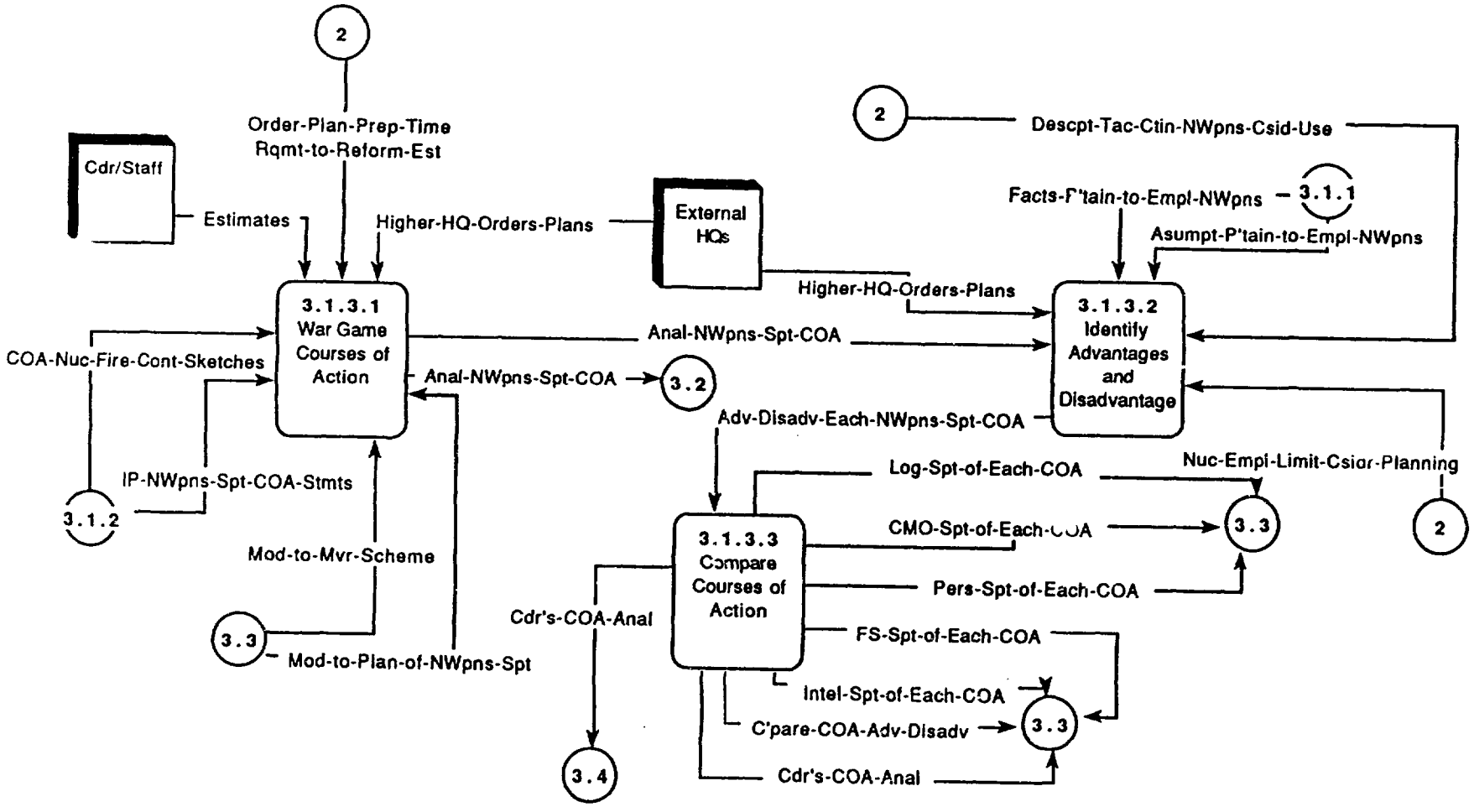
Analyze Relative Combat Power #3.1.2.1



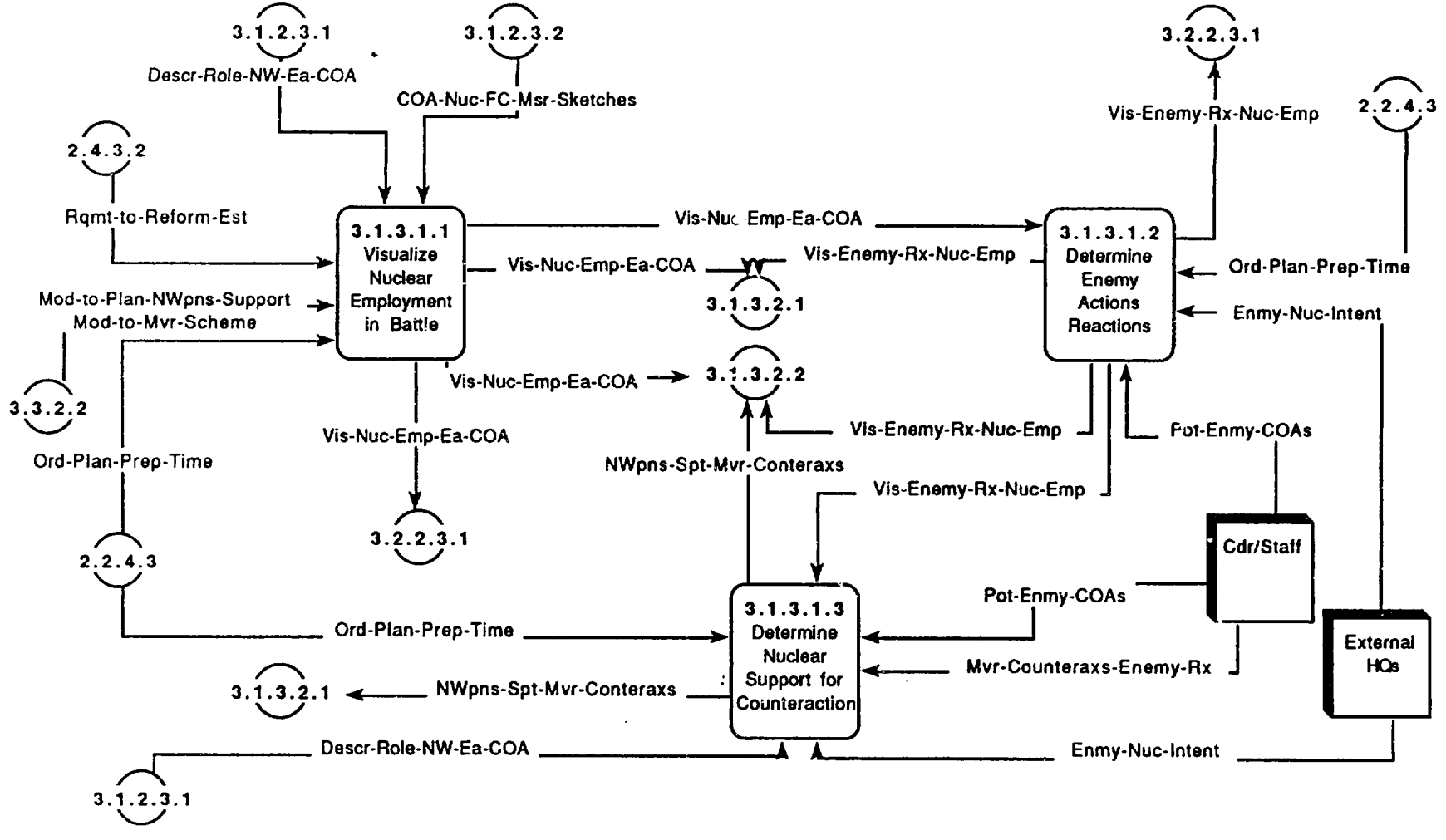
Determine Support for Maneuver Schemes #3.1.2.2



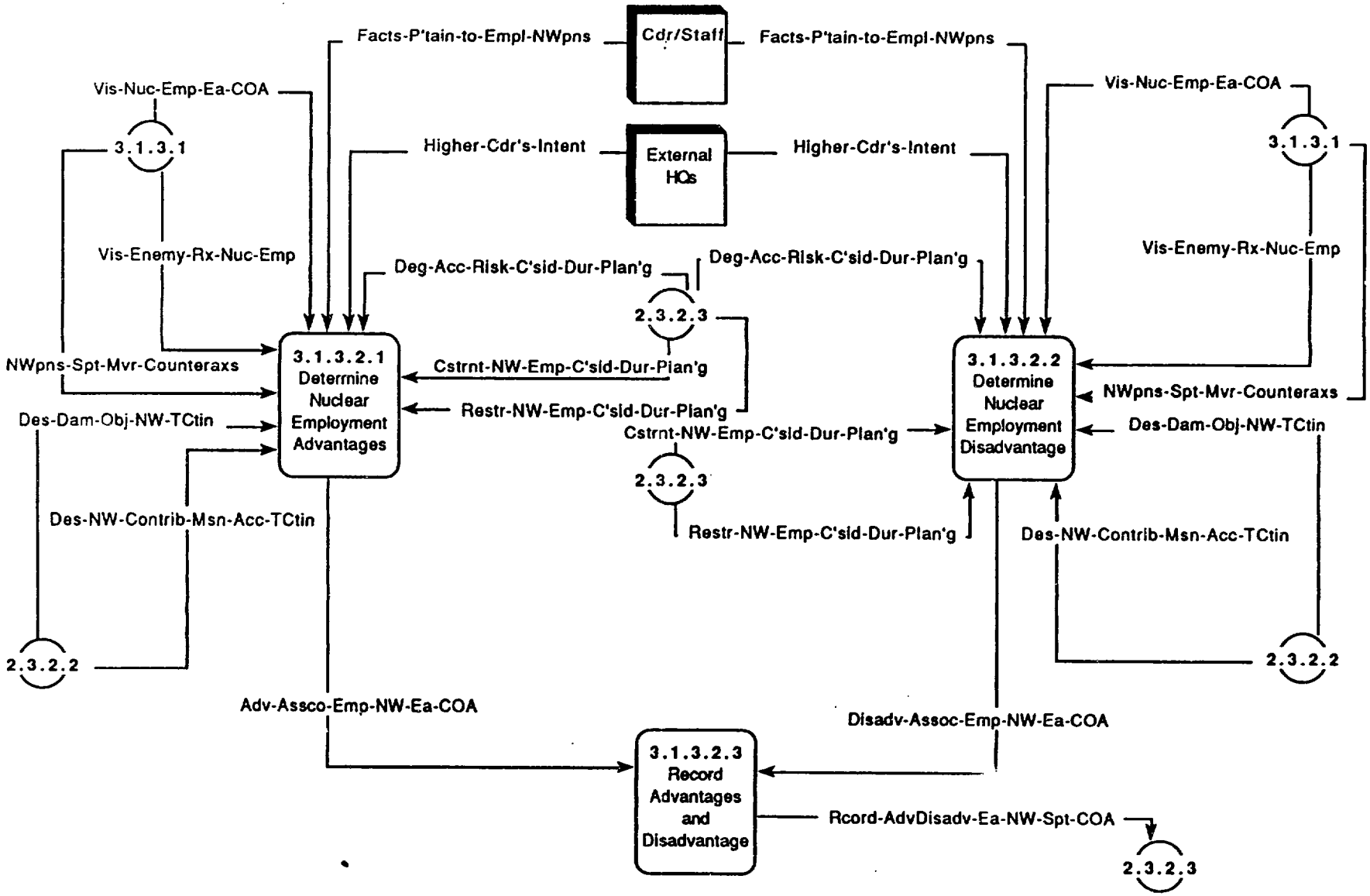
Develop Course of Action Statements #3.1.2.3



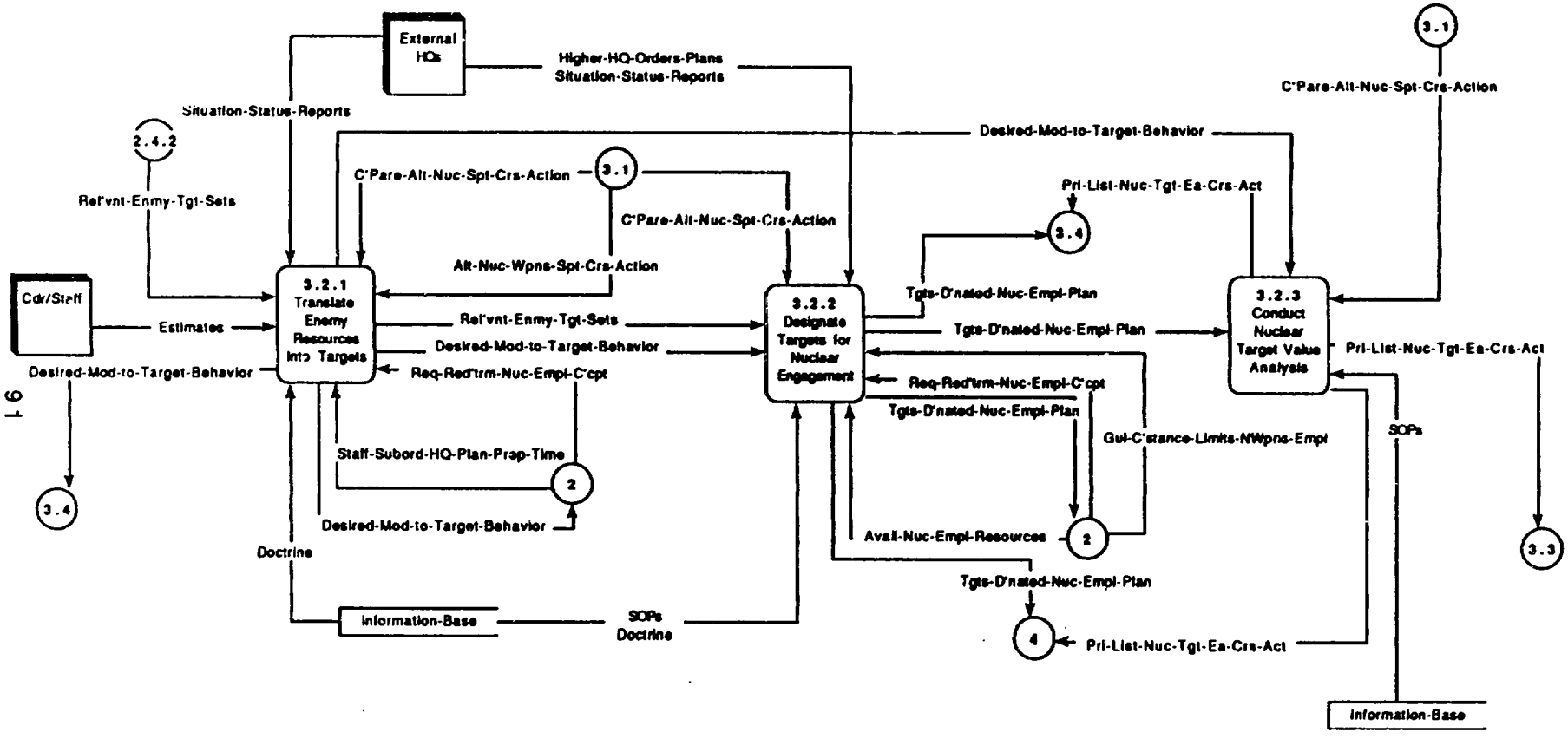
Analyze Courses of Actions #3.1.3



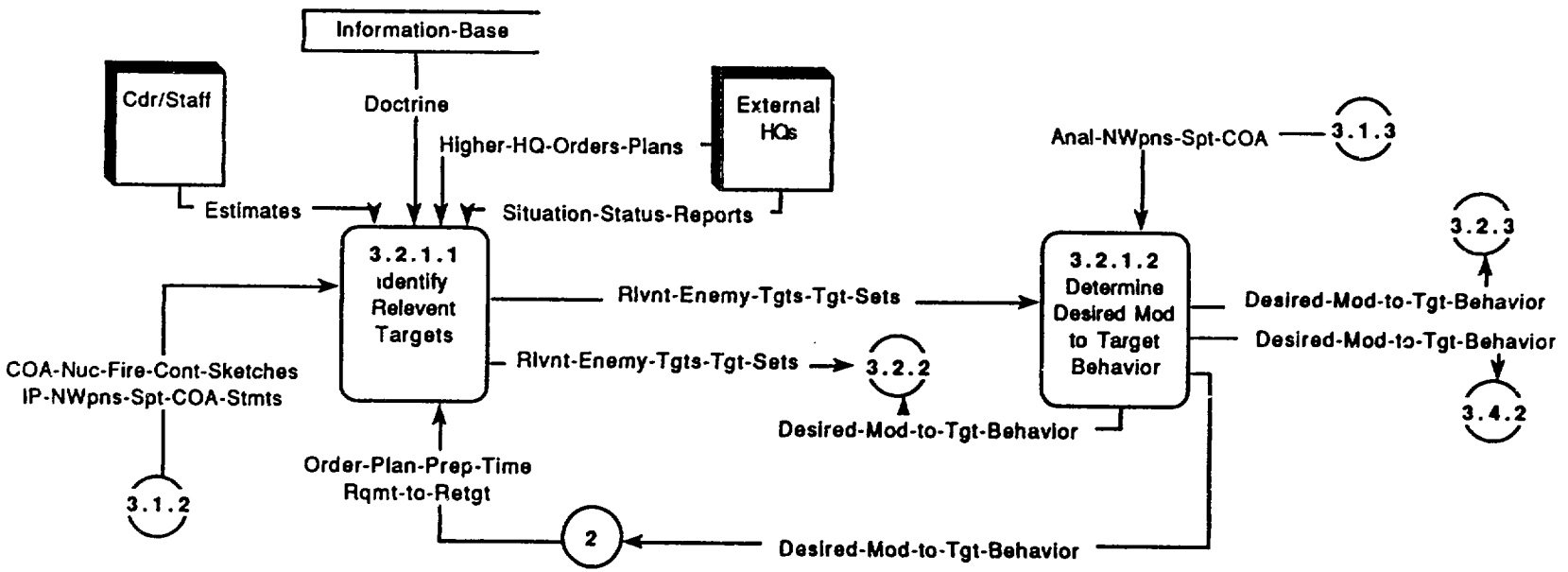
War Game Courses of Action #3.1.3.1



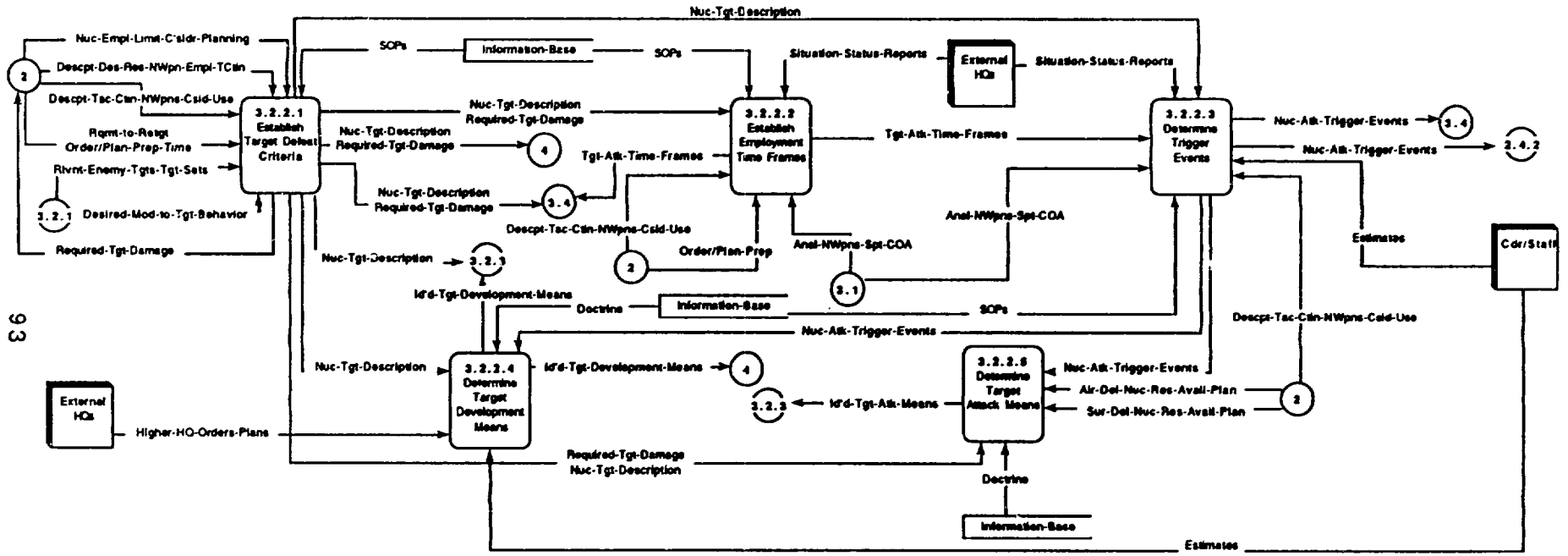
Identify Advantages and Disadvantage #3.1.3.2



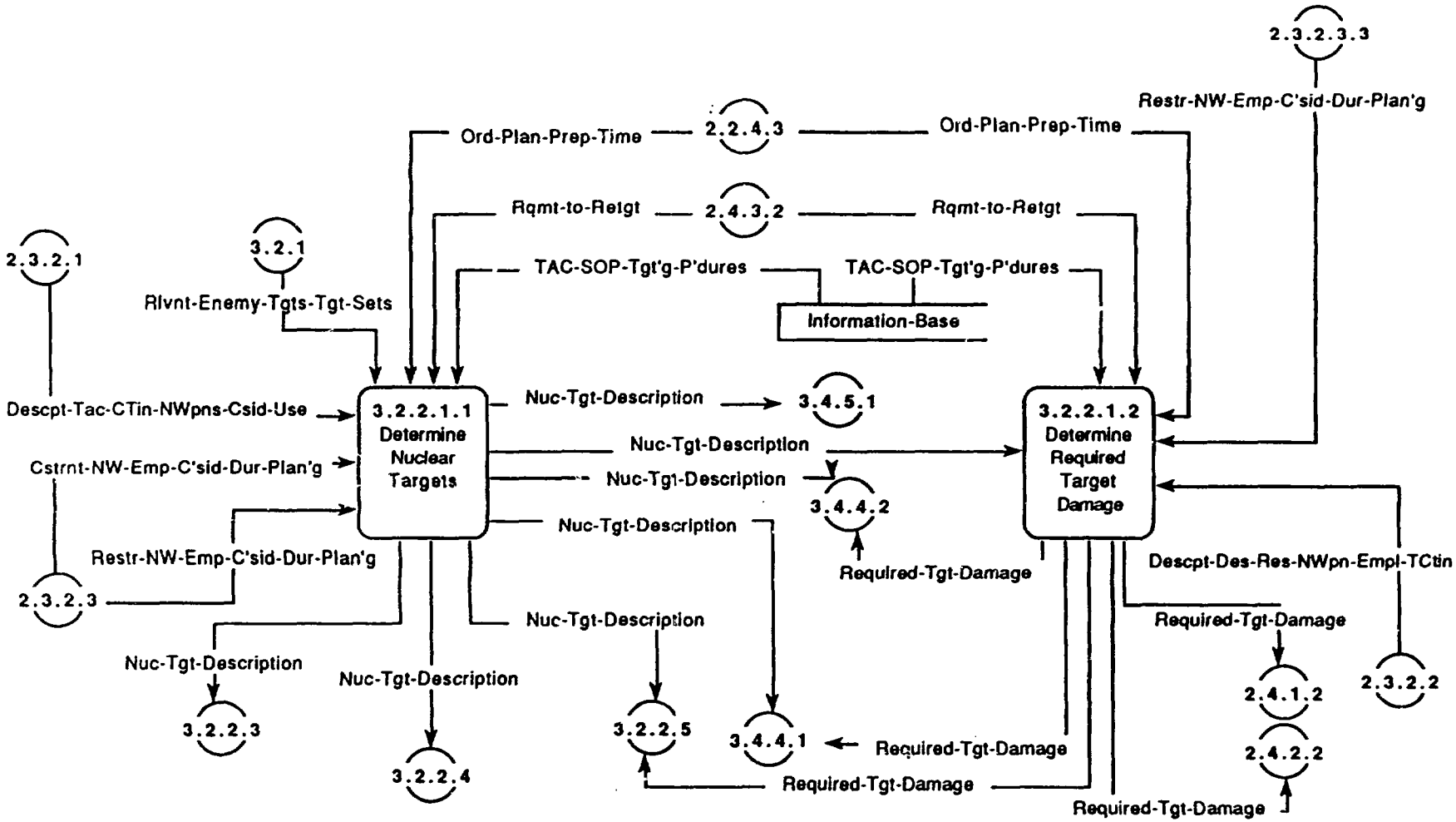
Perform Targeting #3.2



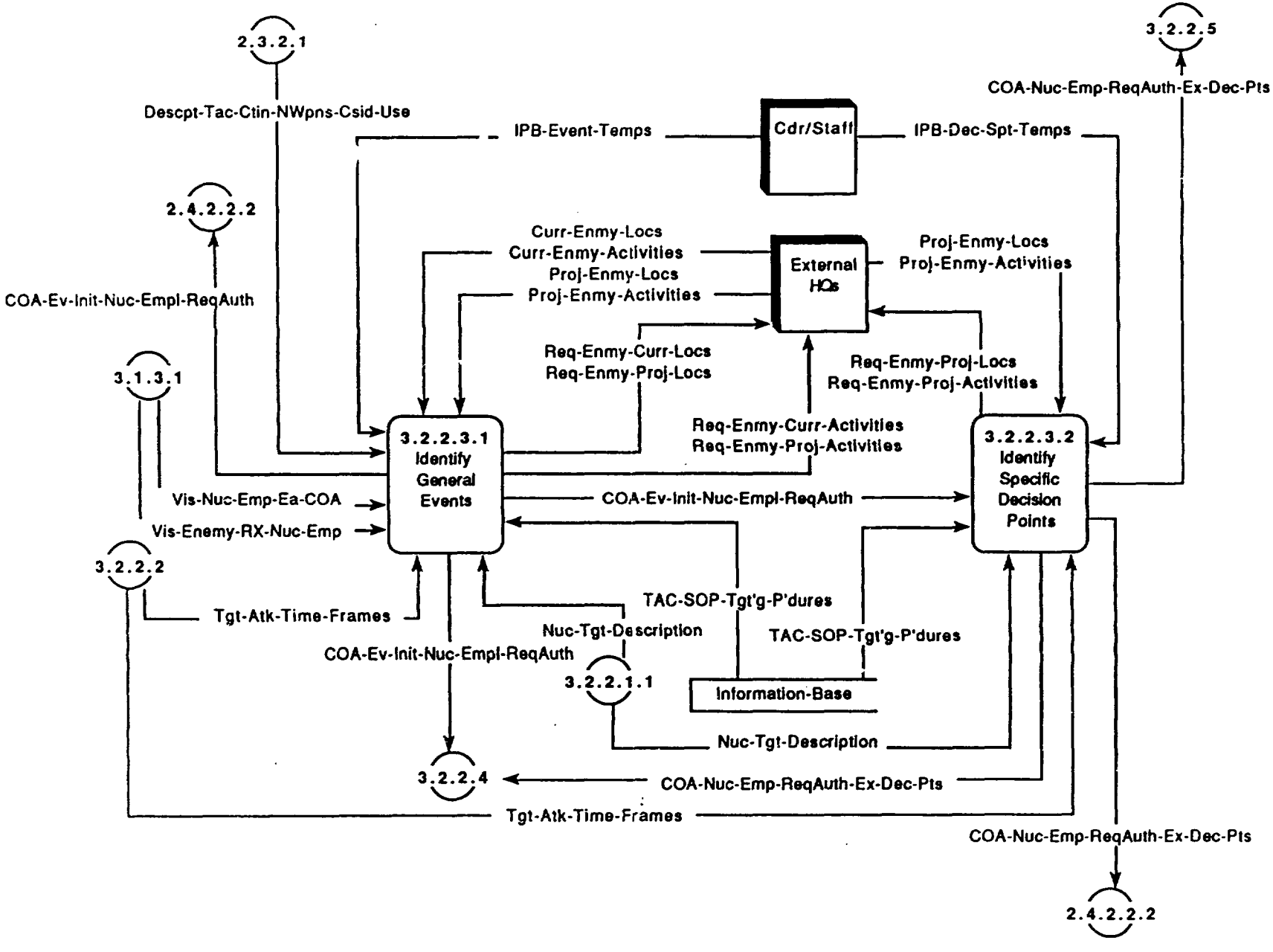
Translate Enemy Resources Into Targets #3.2.1



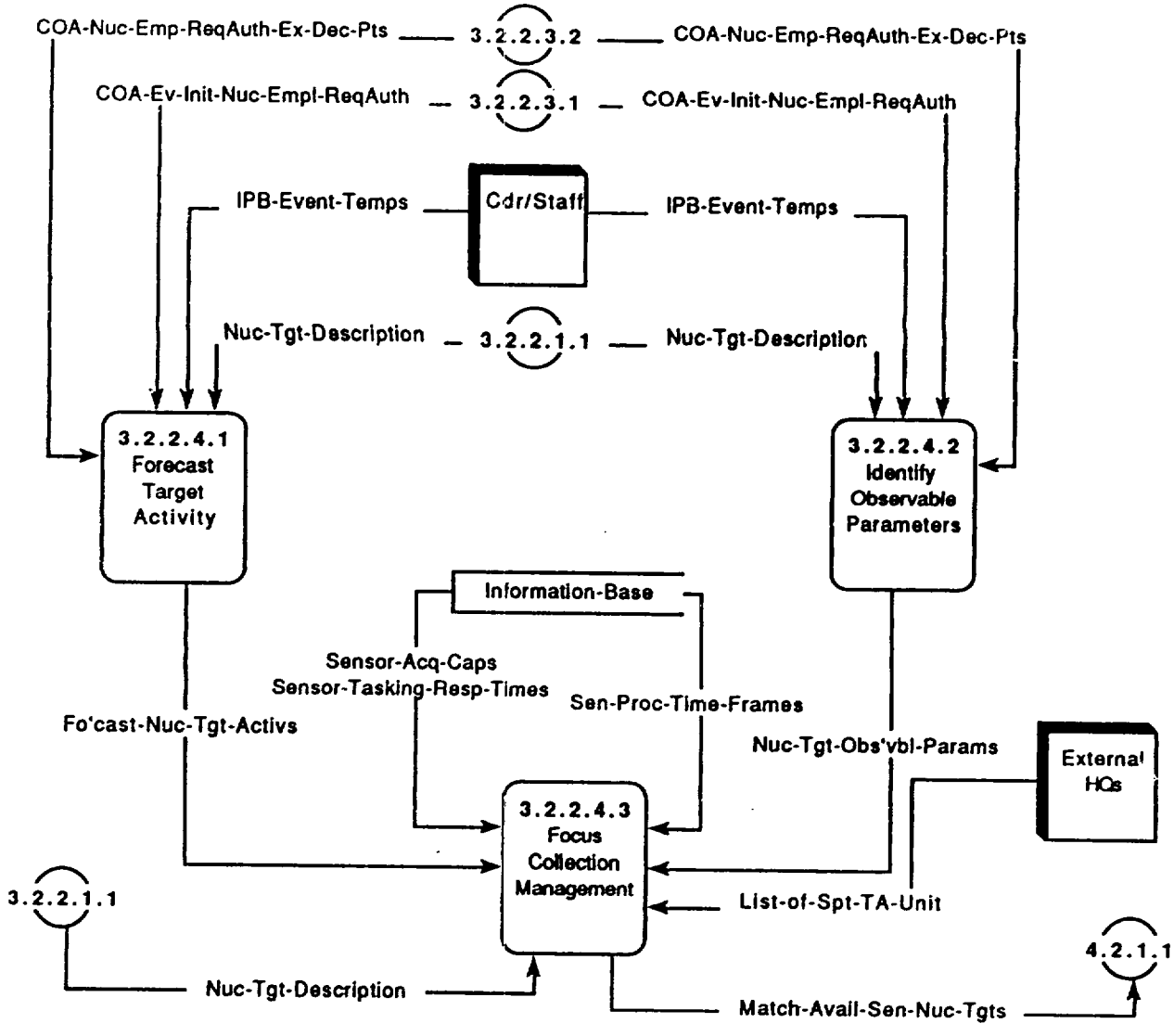
Designate Targets for Nuclear Engagement #3.2.2



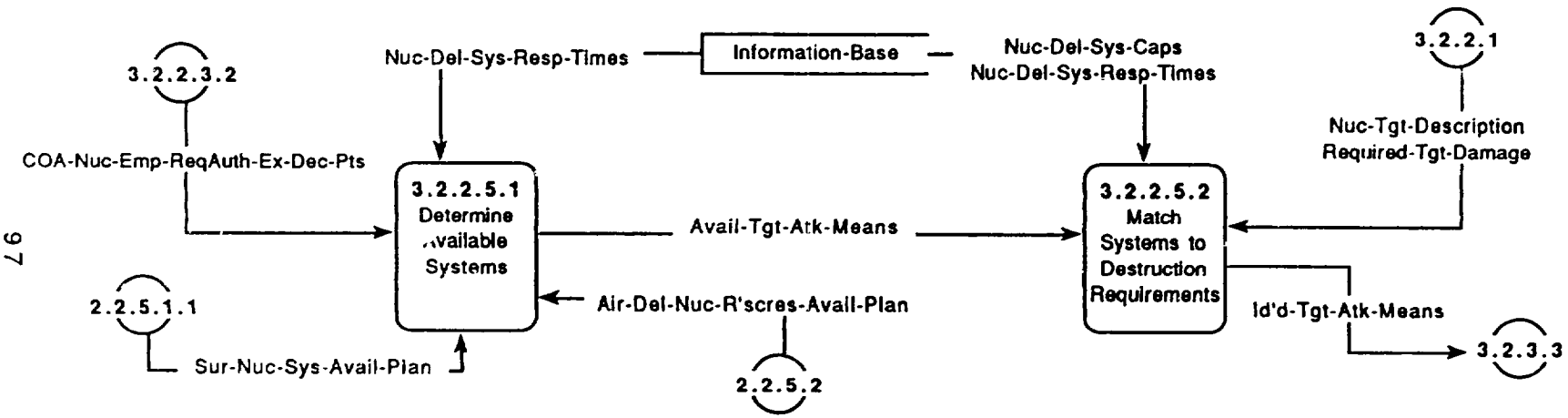
Establish Target Defeat Criteria #3.2.2.1



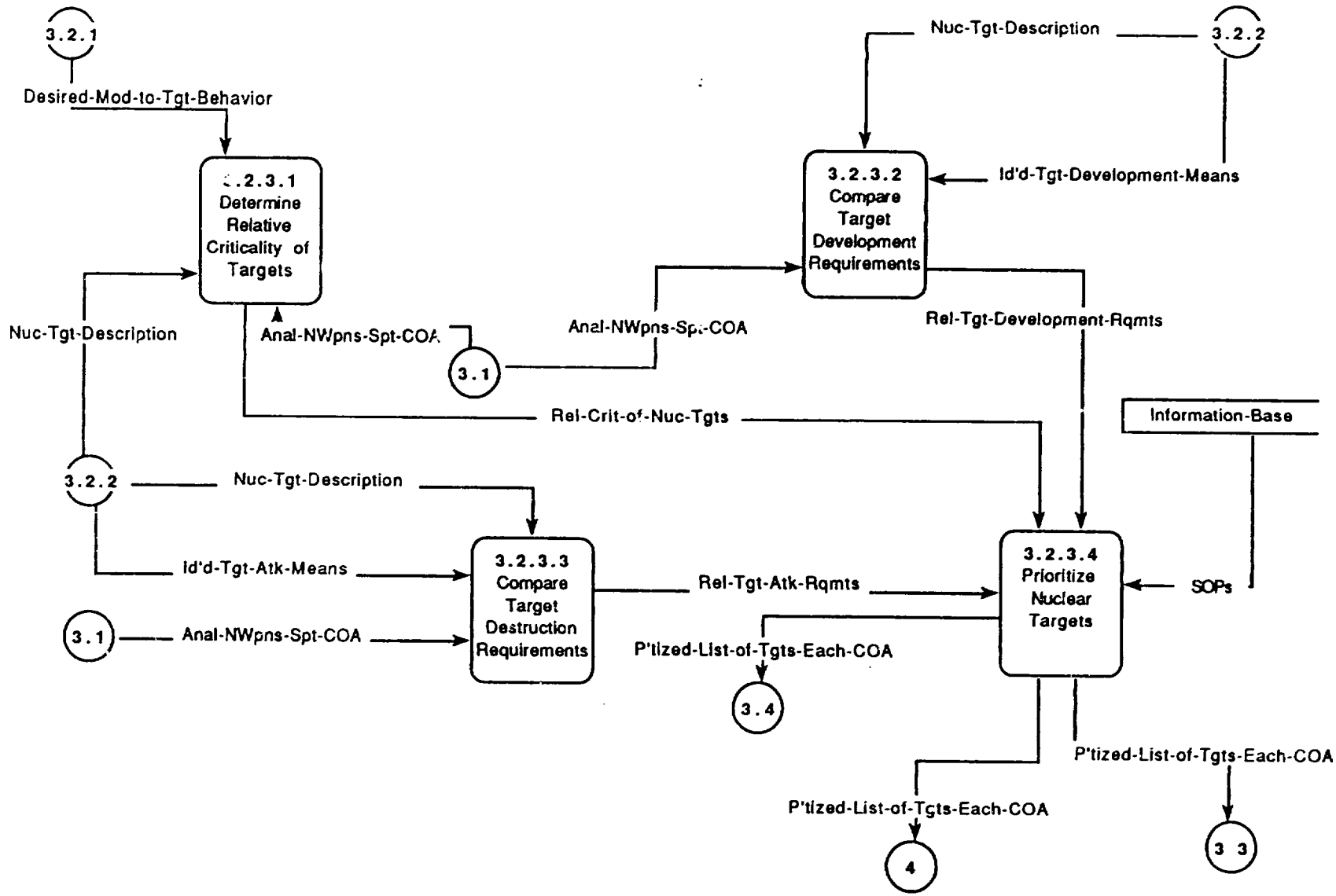
Determine Trigger Events #3.2.2.3



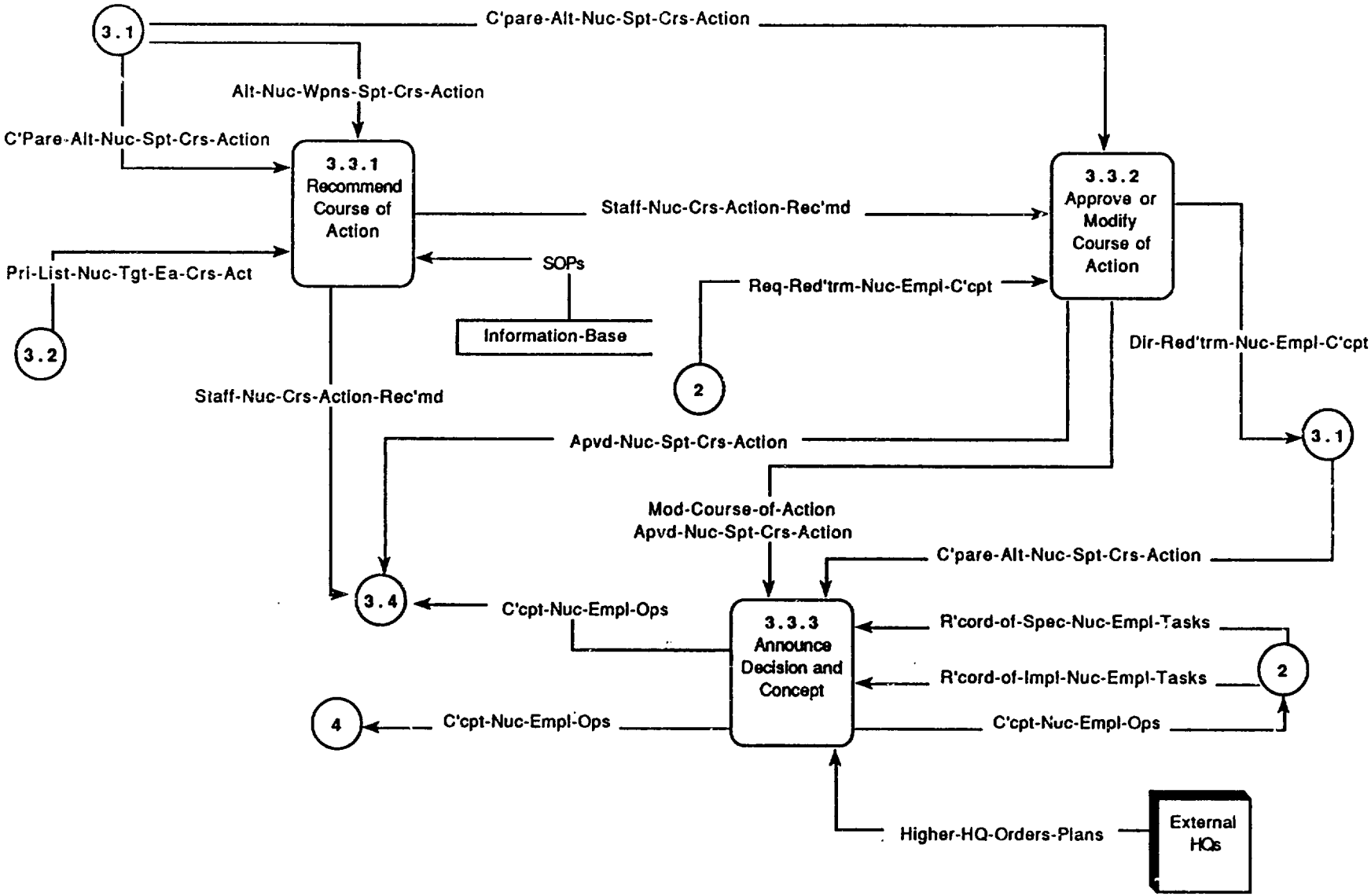
Determine Target Development Means #3.2.2.4



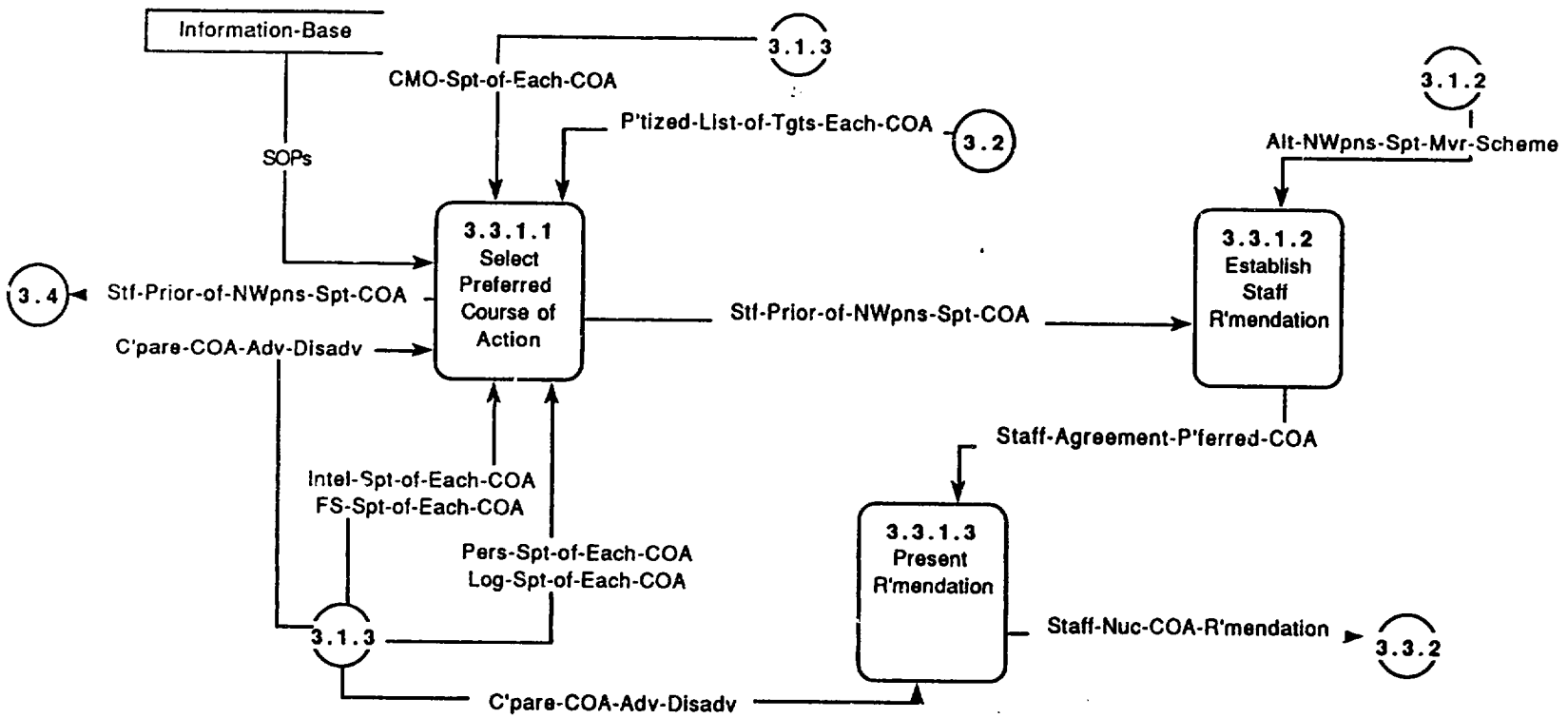
Determine Target Attack Means #3.2.2.5



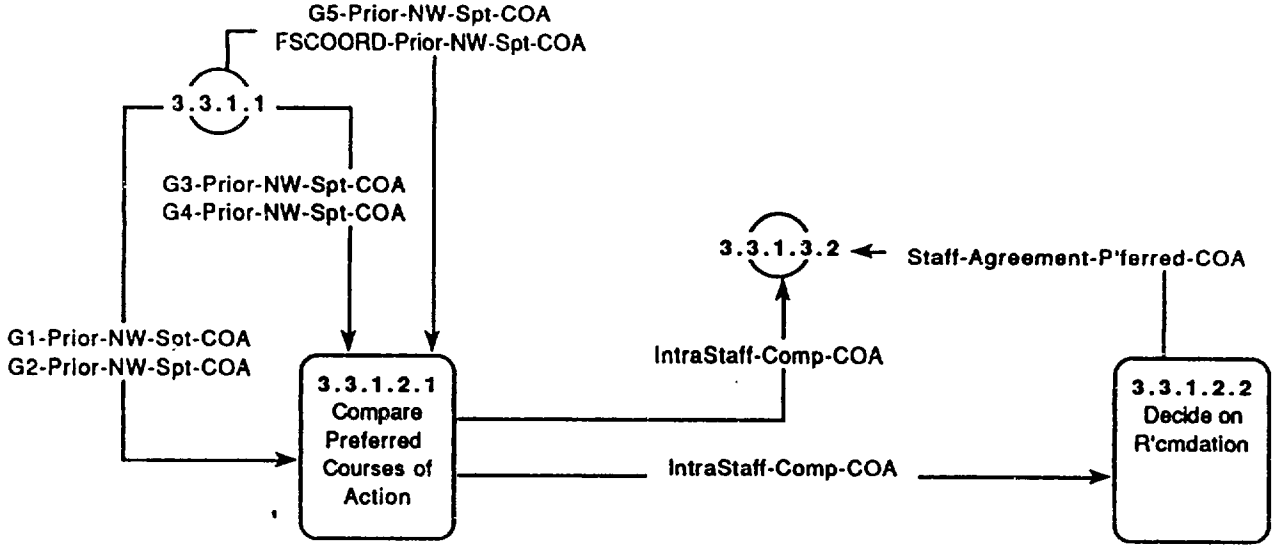
Conduct Nuclear Target Value Analysis #3.2.3



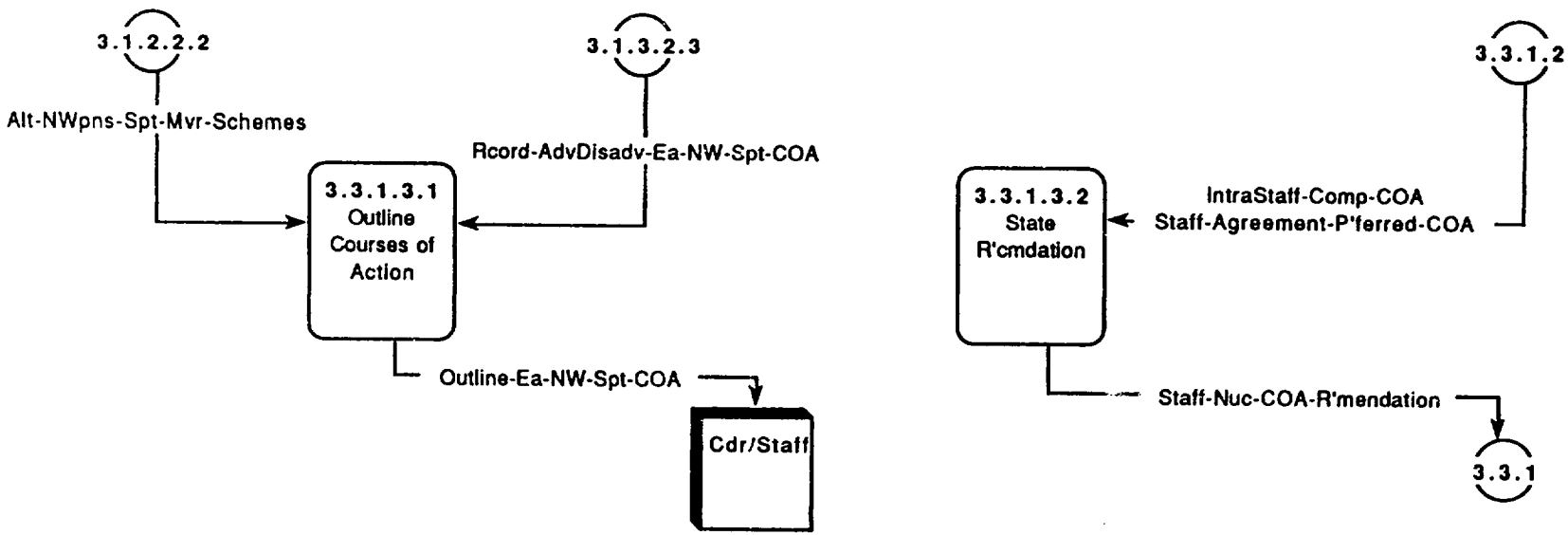
Decide on Course of Action #3.3



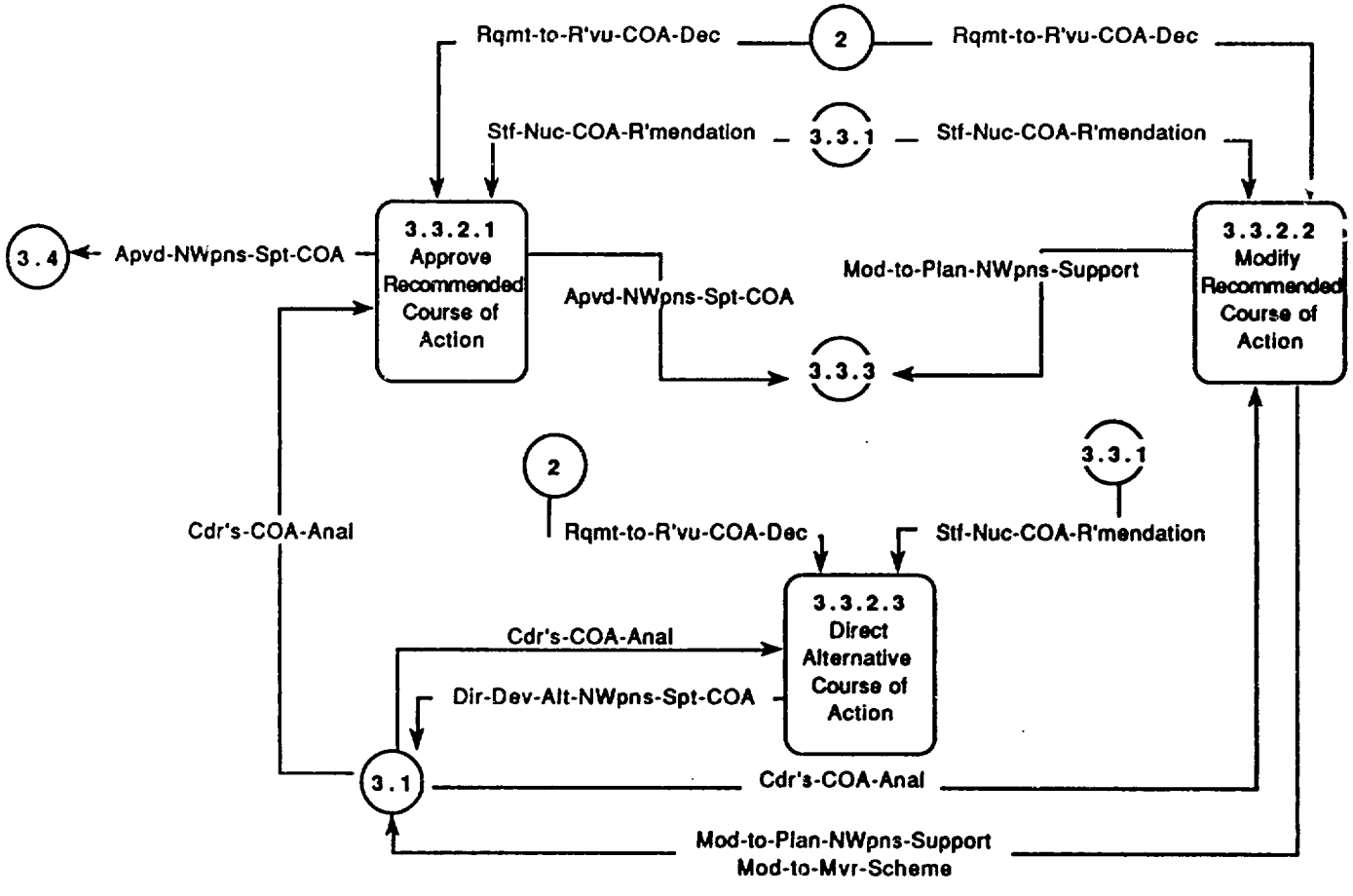
Recommend Course of Action #3.3.1



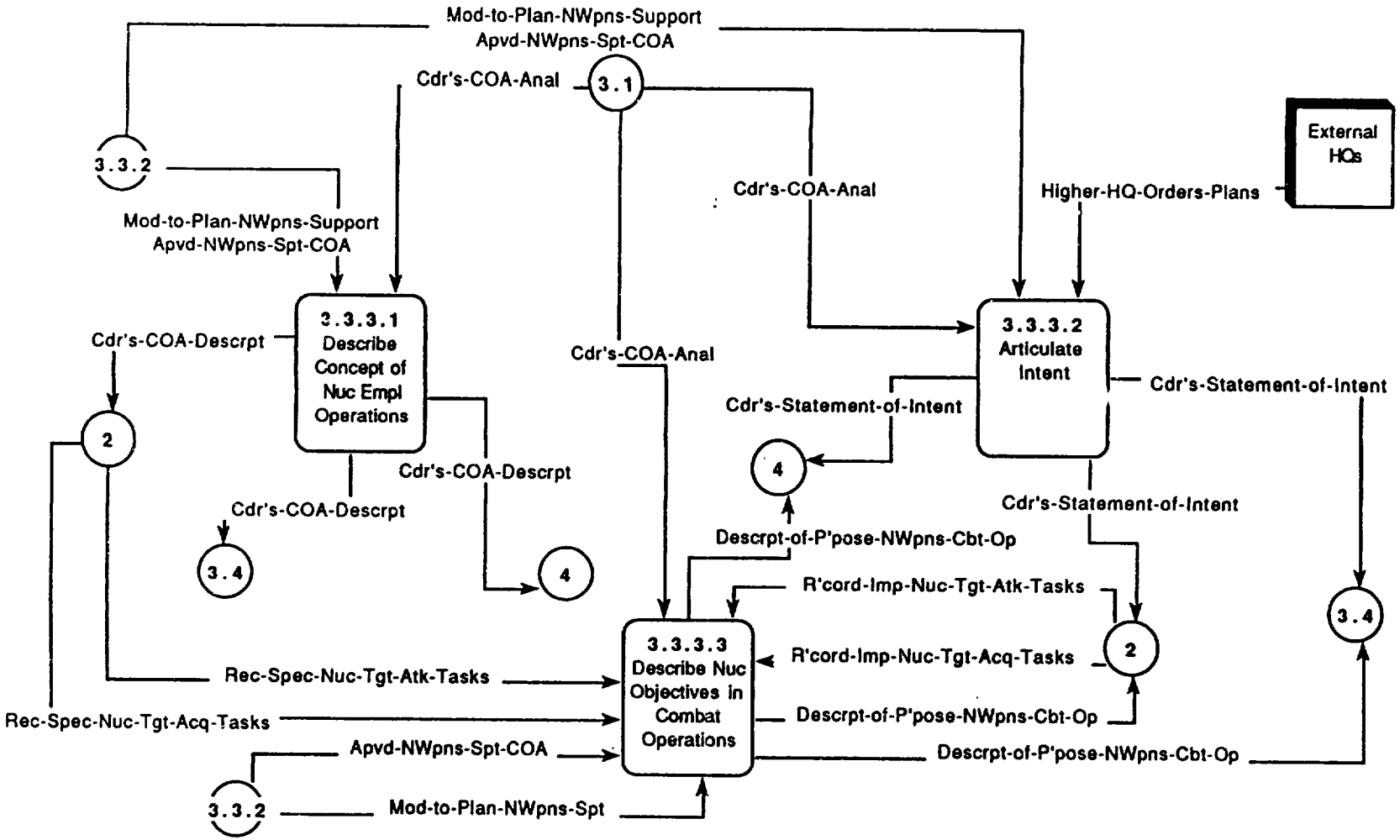
Establish Staff R'mendation #3.3.1.2



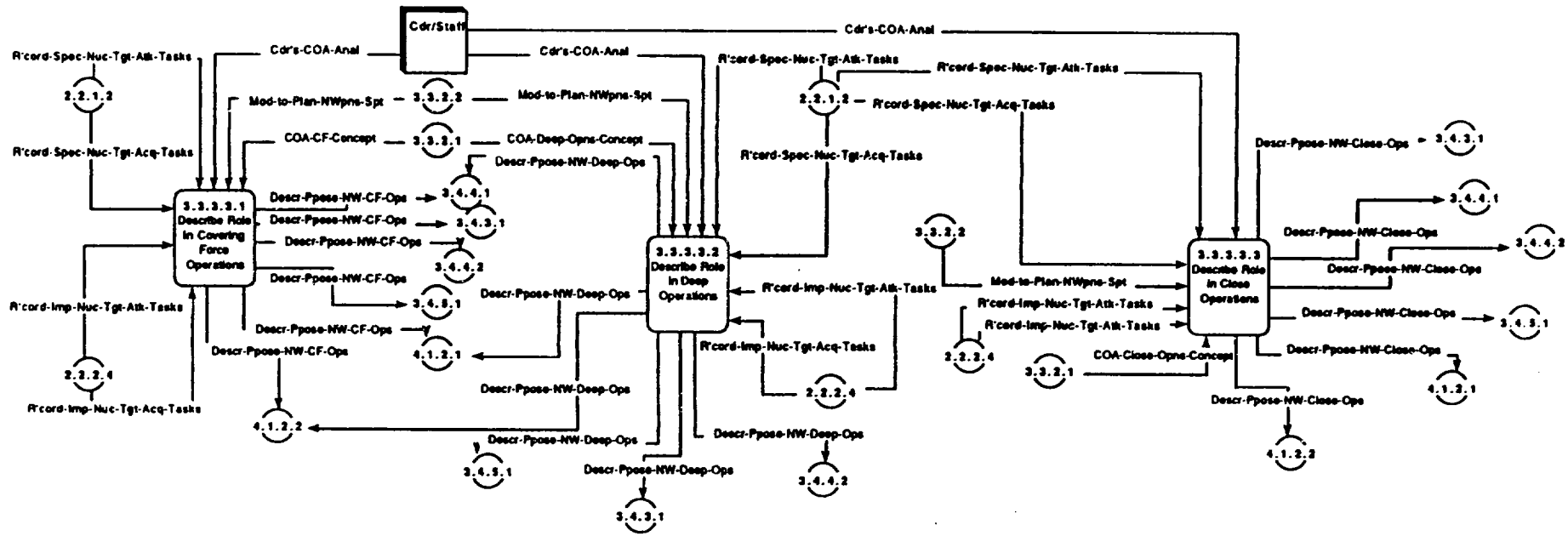
Present R'mendation #3.3.1.3



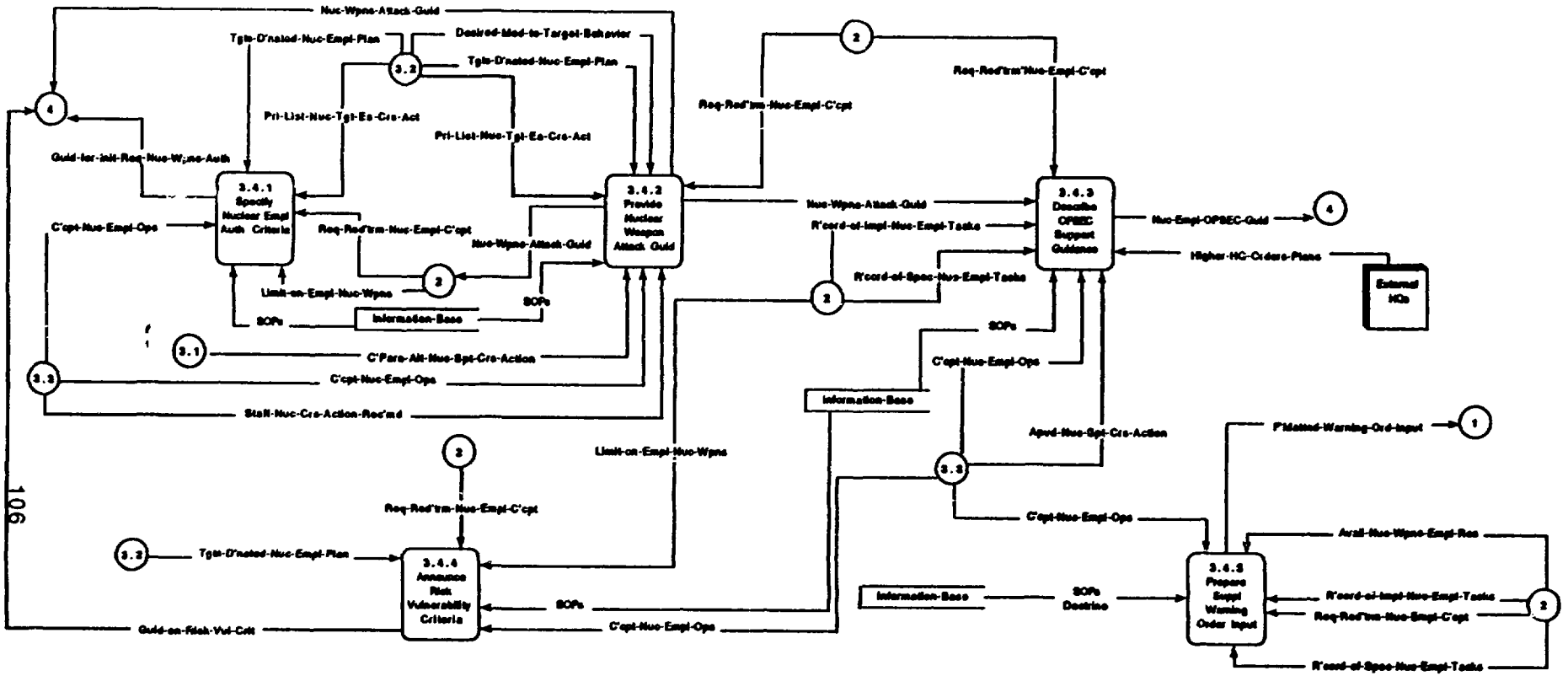
Approve or Modify Course of Action #3.3.2

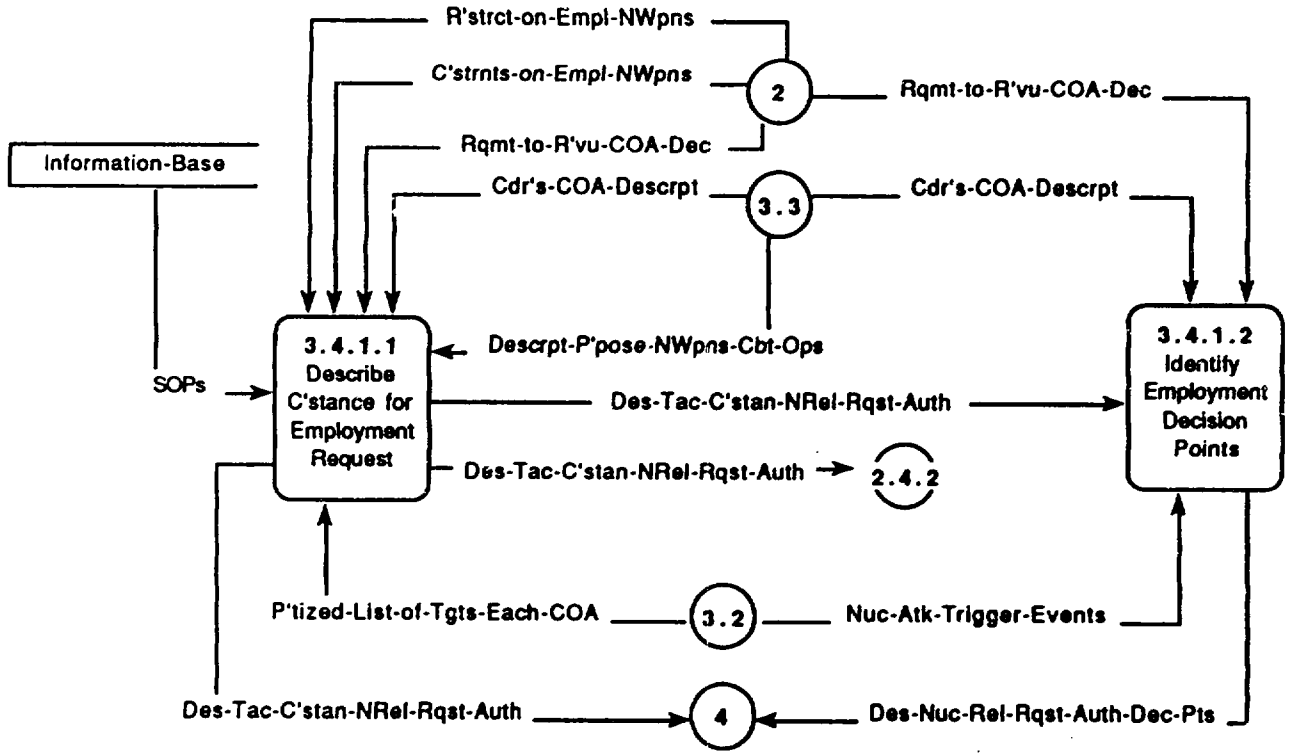


Announce Decision and Concept #3.3.3

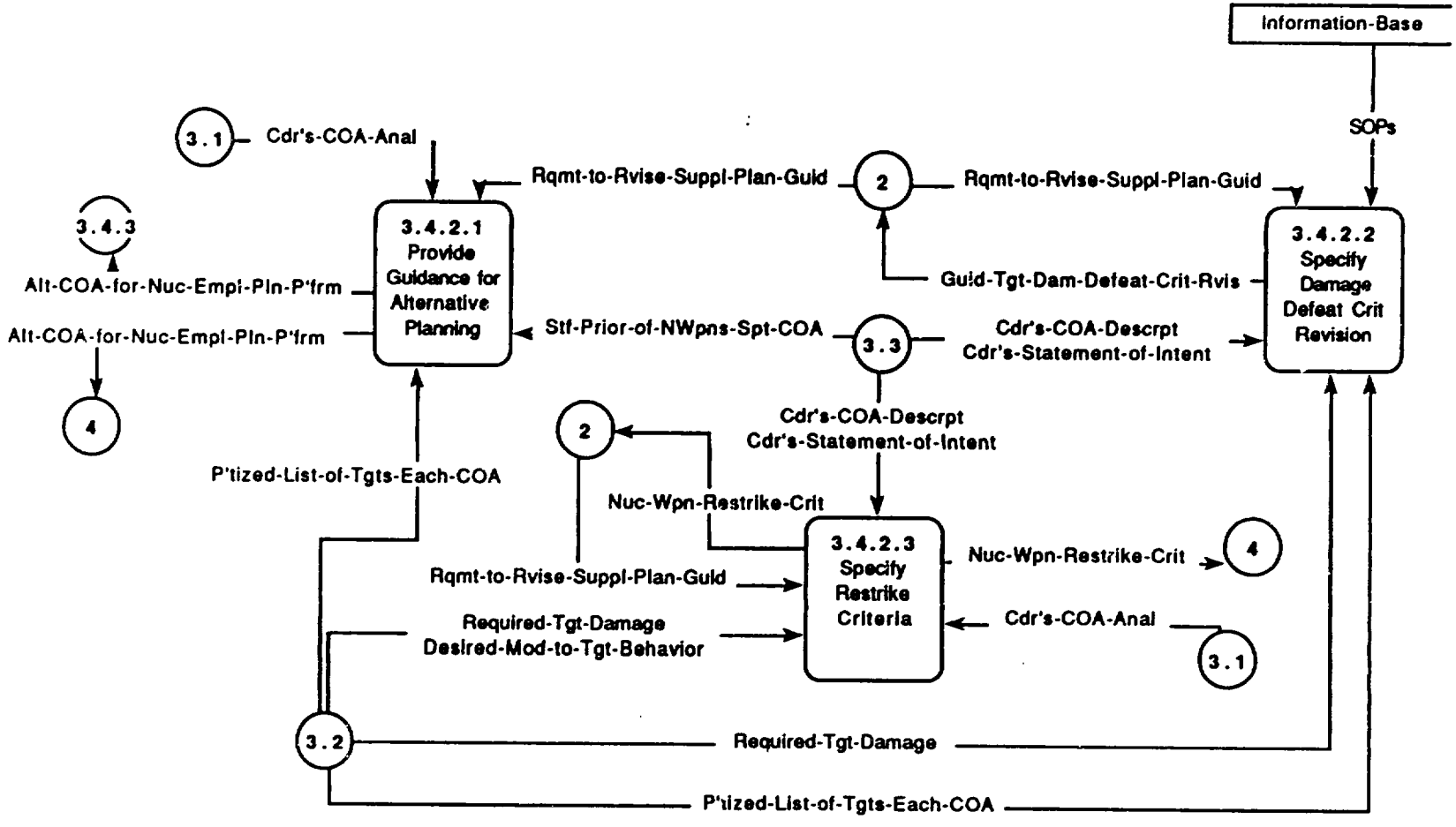


Describe Nuc Objectives In Combat Operations #3.3.3.3

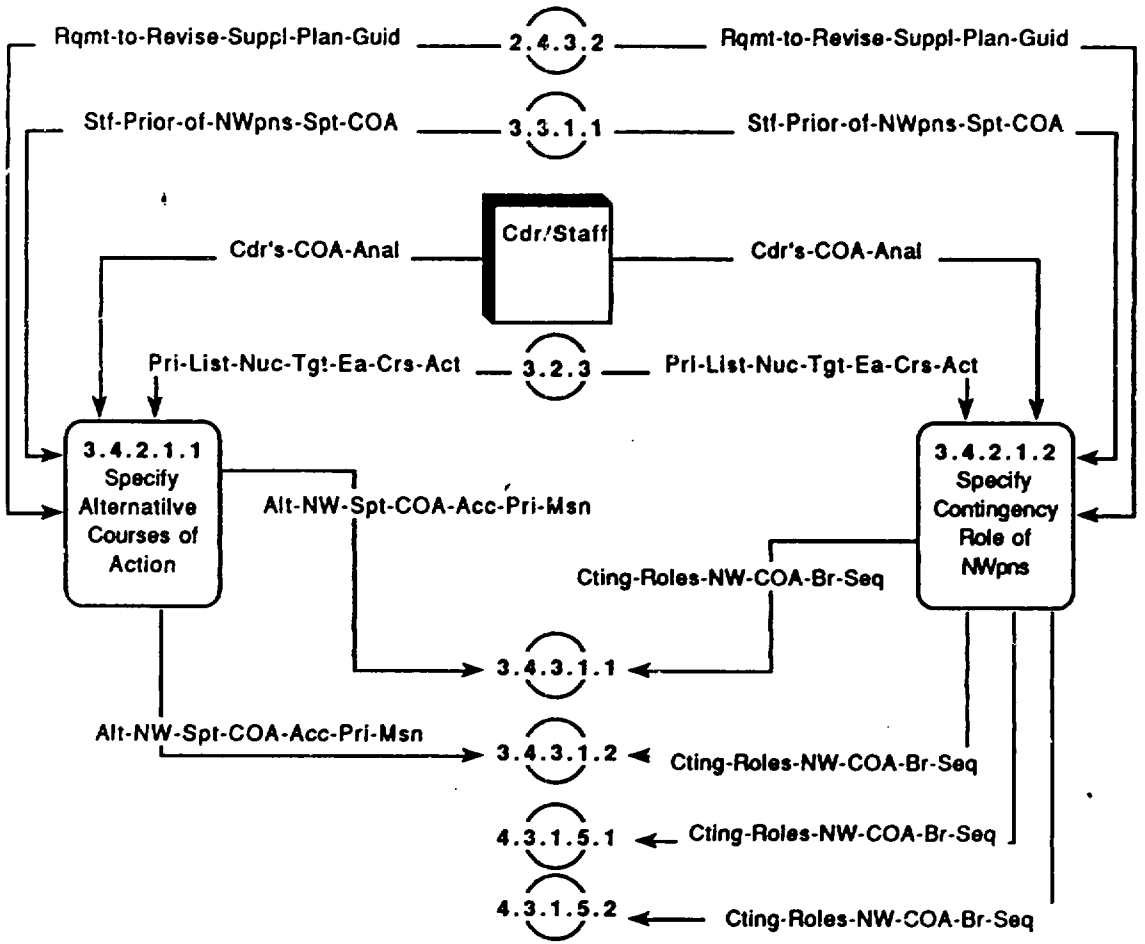

Nuc-Wpns-Attack-Guid
Tgts-D'nated-Nuc-Empl-Plan
Desired-Mod-to-Target-Behavior
3.2
Tgts-D'nated-Nuc-Empl-Plan
Pri-List-Nuc-Tgt-Es-Crs-Act
Pri-List-Nuc-Tgt-Es-Crs-Act
Guid-for-Init-Req-Nuc-W;ns-Auth
3.4.1 Specify Nuclear Empl Auth Criteria
C'cpt-Nuc-Empl-Ops
Req-Red'tns-Nuc-Empl-C'cpt
Nuc-Wpns-Attack-Guid
Limit-on-Empl-Nuc-Wpns
SOPs
Information Base
SOPs
3.4.2 Provide Nuclear Weapon Attack Guid
Req-Red'tns-Nuc-Empl-C'cpt
2
Req-Red'tns-Nuc-Empl-C'cpt
Nuc-Wpns-Attack-Guid
R'cord-of-Impl-Nuc-Empl-Tasks
R'cord-of-Spec-Nuc-Empl-Tasks
3.4.3 Describe OPSEC Support Guidance
Nuc-Empl-OPSEC-Guid
Higher-HC-Orders-Plans
External HQs
SOPs
C'cpt-Nuc-Empl-Ops
Information Base
3.1
C'Para-Alt-Nuc-Spt-Crs-Action
3.3
C'cpt-Nuc-Empl-Ops
Stall-Nuc-Crs-Action-Rec'md
Limit-on-Empl-Nuc-Wpns
Apvd-Nuc-Spt-Crs-Action
P'blotted-Warning-Ord-Input
3.3
C'cpt-Nuc-Empl-Ops
Avail-Nuc-Wpns-Empl-Res
R'cord-of-Impl-Nuc-Empl-Tasks
Req-Red'tns-Nuc-Empl-C'cpt
R'cord-of-Spec-Nuc-Empl-Tasks
3.4.5 Prepare Suppl Warning Order Input
Information Base
SOPs Doctrine
2
Req-Red'tns-Nuc-Empl-C'cpt
3.2
Tgts-D'nated-Nuc-Empl-Plan
3.4.4 Announce Risk Vulnerability Criteria
SOPs
C'cpt-Nuc-Empl-Ops
Guid-on-Risk-Vul-Crit



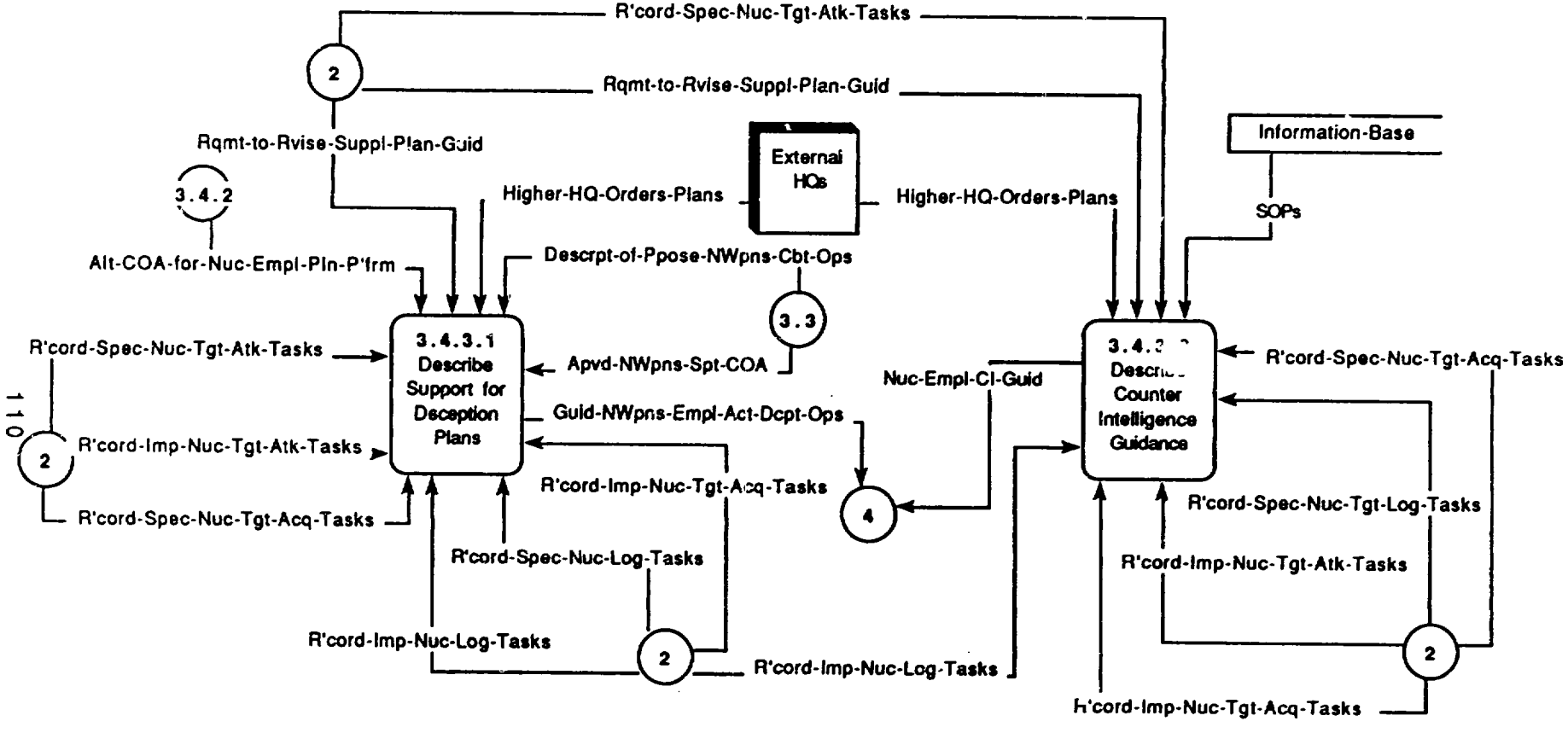
Specify Nuclear Empl Auth Criteria #3.4.1



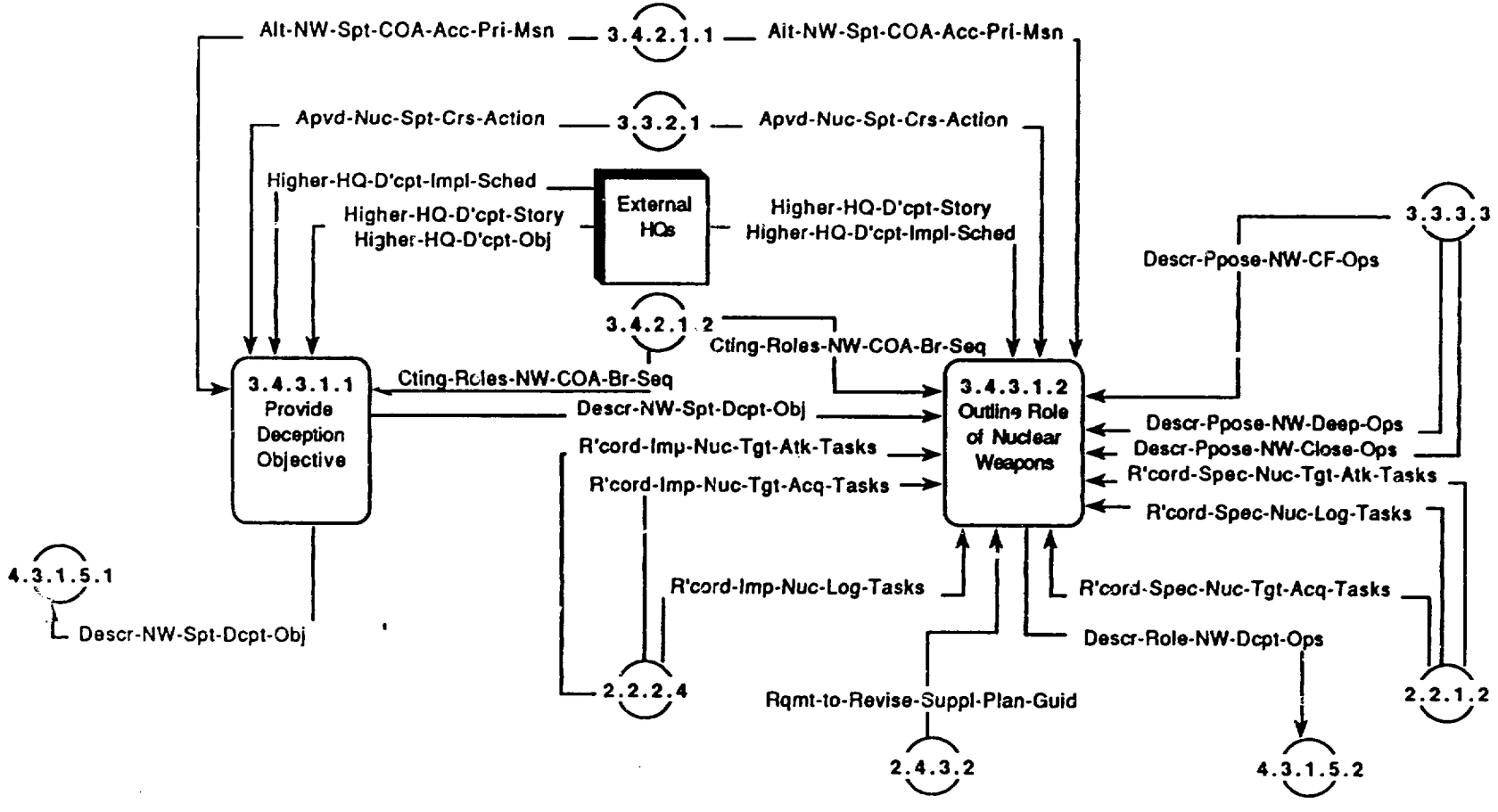
Provide Nuclear Weapon Attack Guid #3.4.2



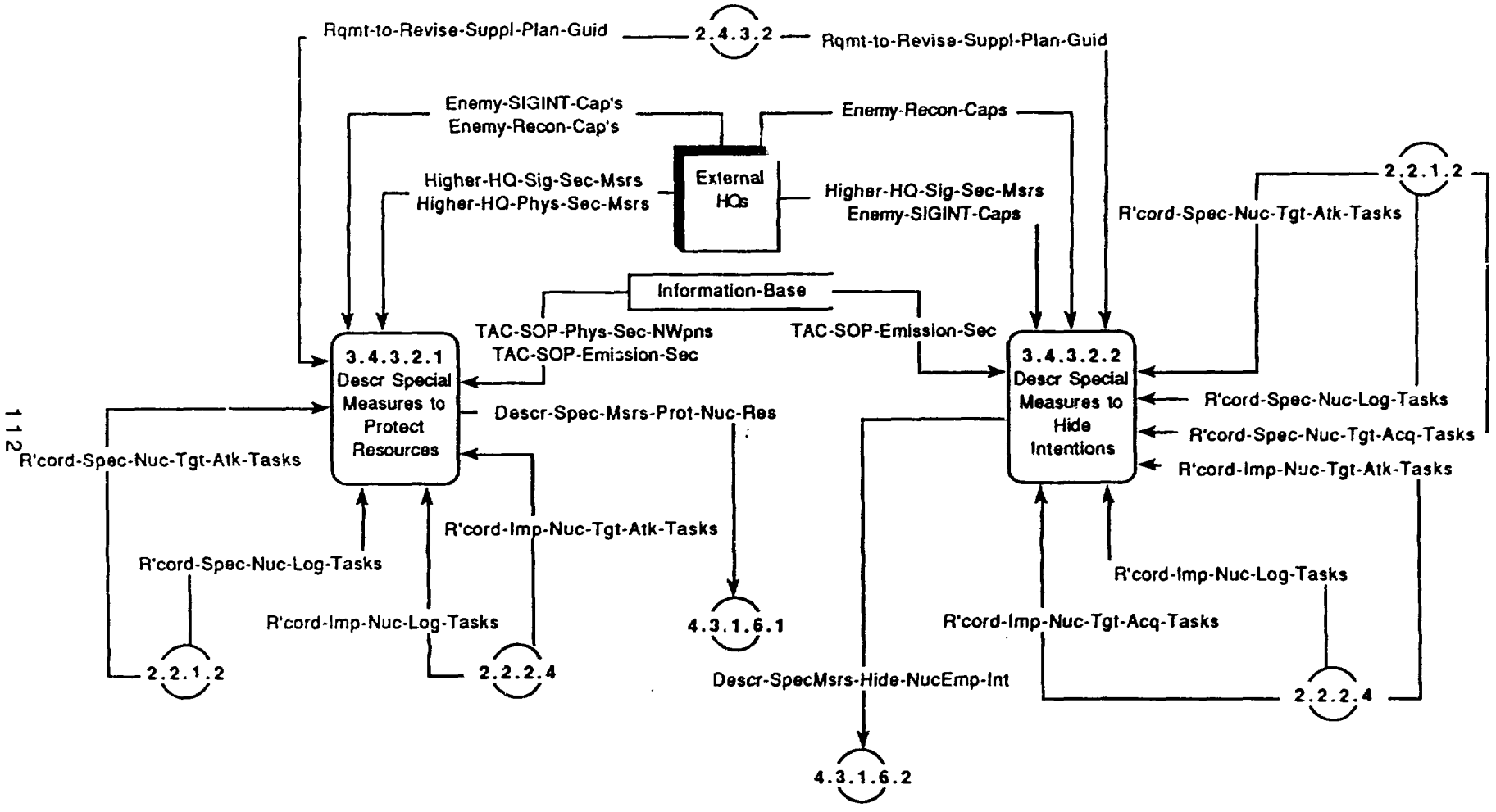
Provide Guidance for Alternative Planning #3.4.2.1



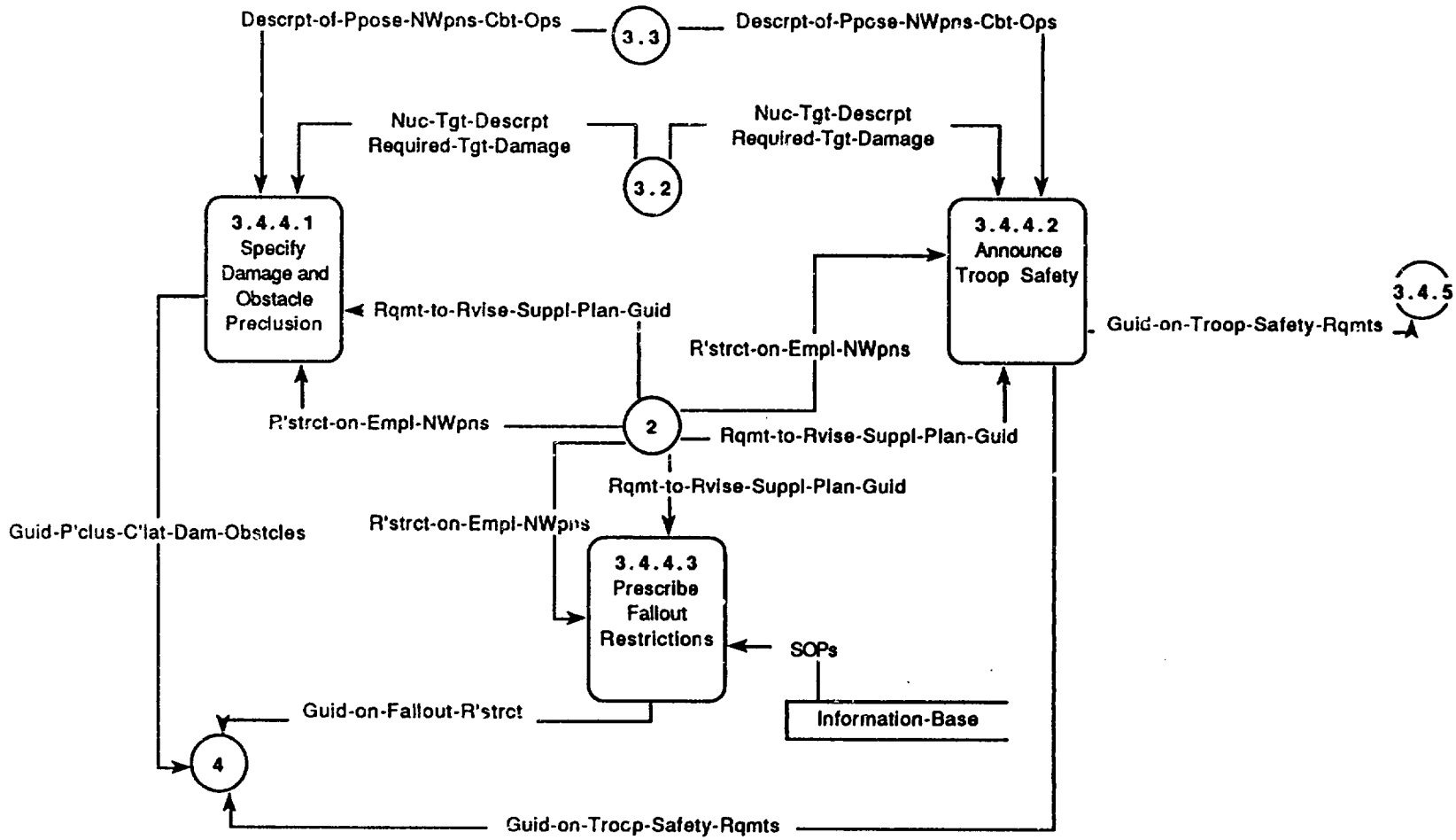
Describe OPSEC Support Guidance #3.4.3



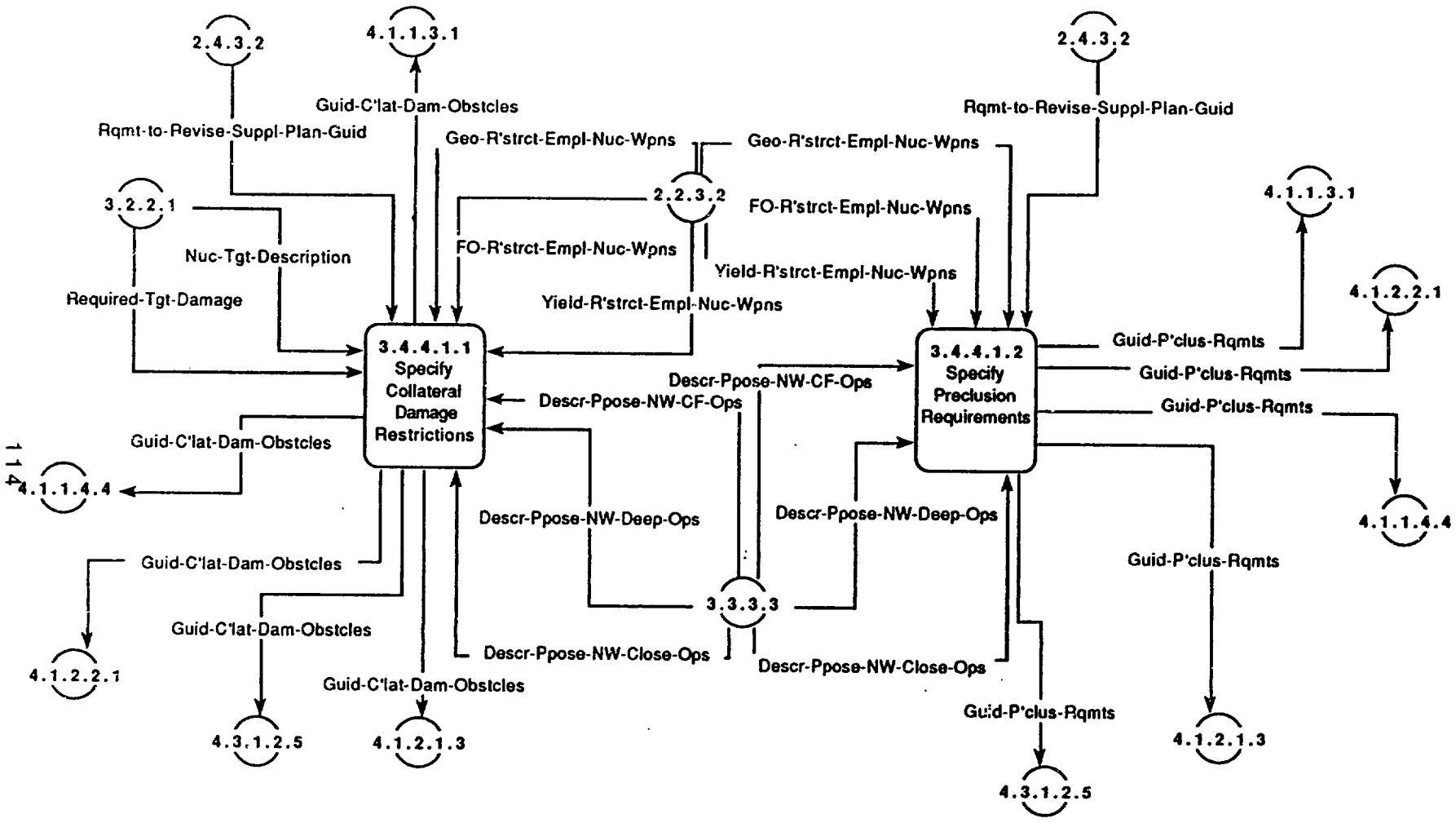
Describe Support for Deception Plans #3.4.3.1



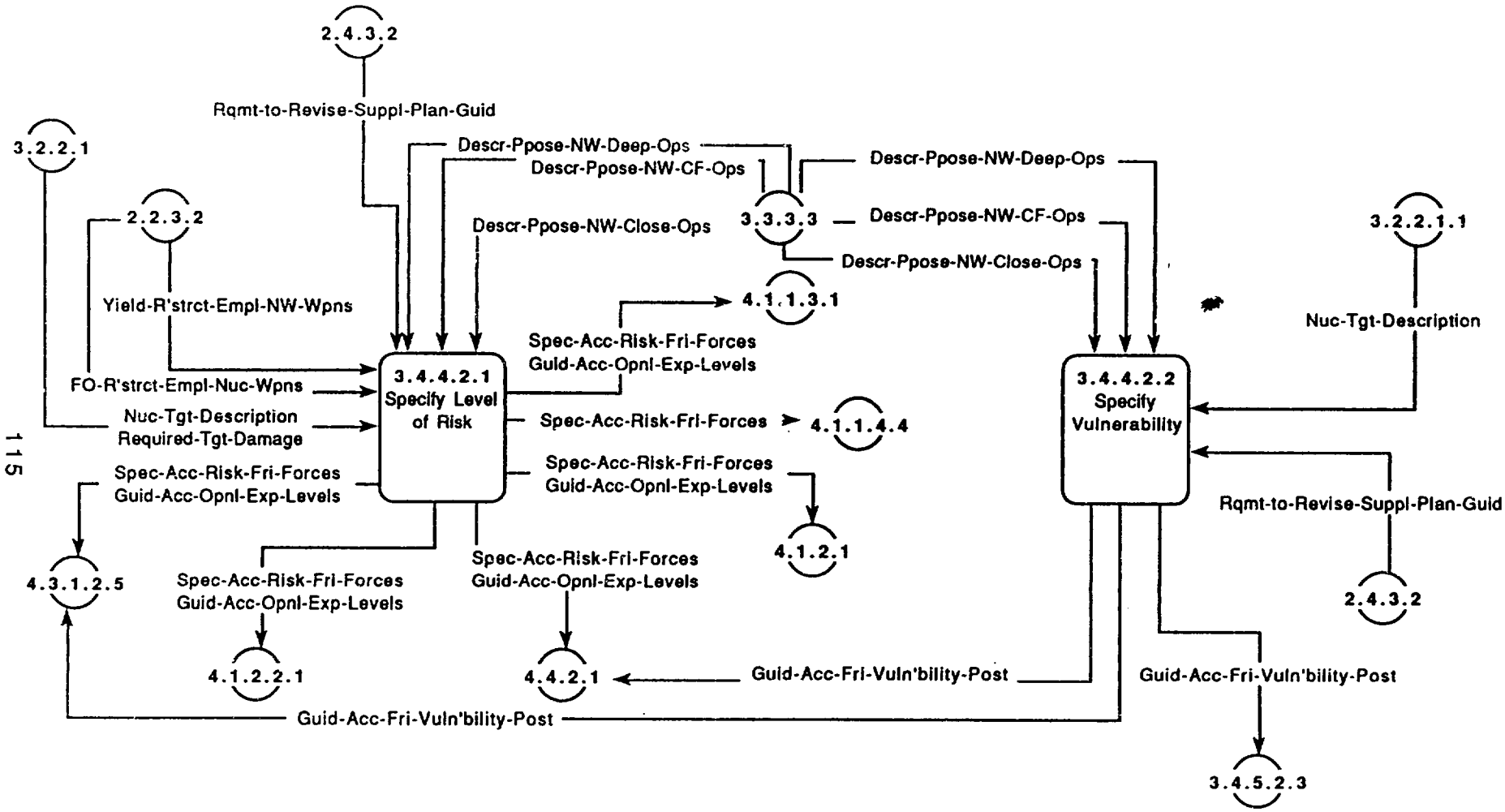
Describe Counter Intelligence Guidance #3.4.3.2



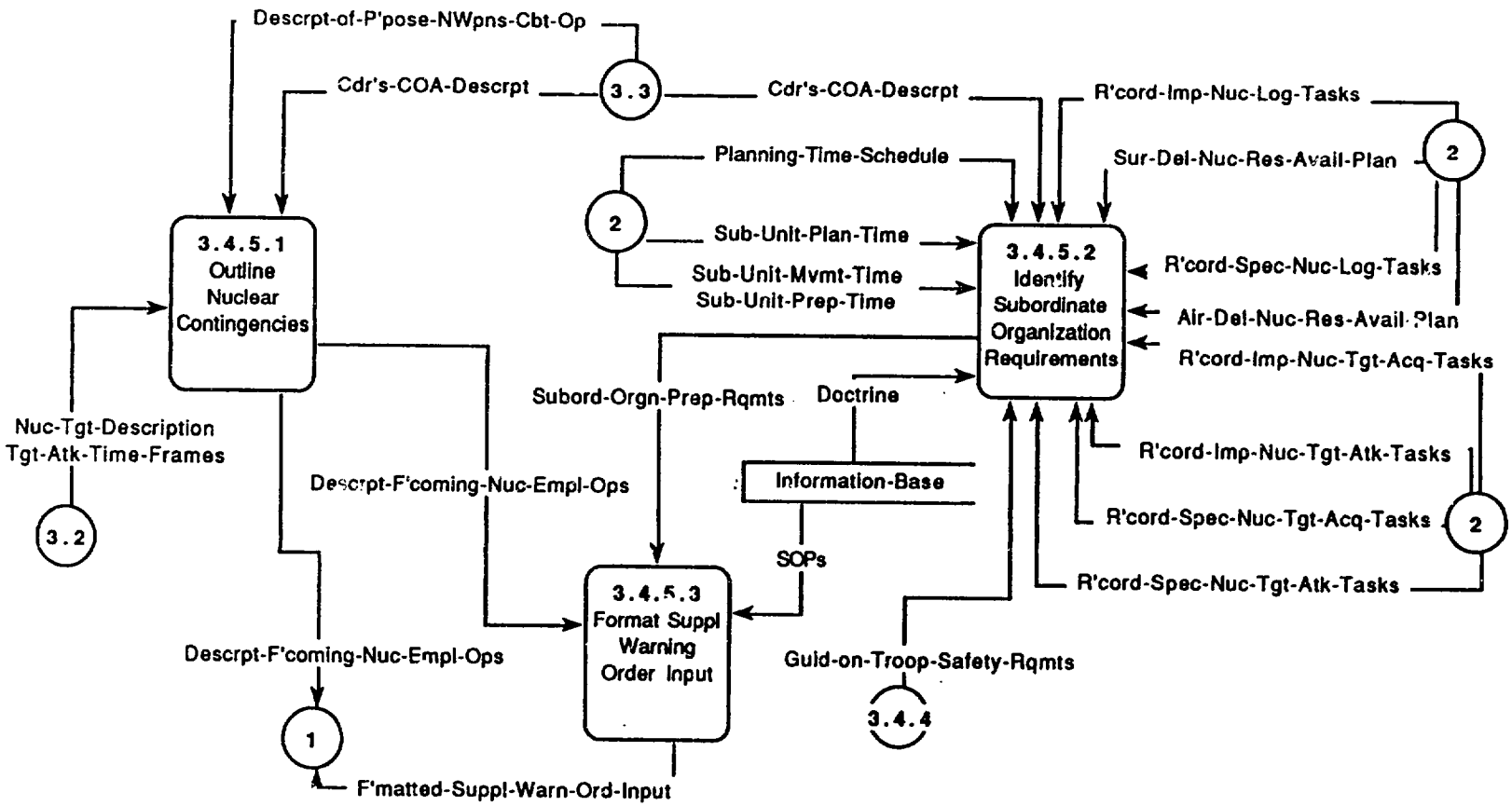
Announce Risk Vulnerability Criteria #3.4.4



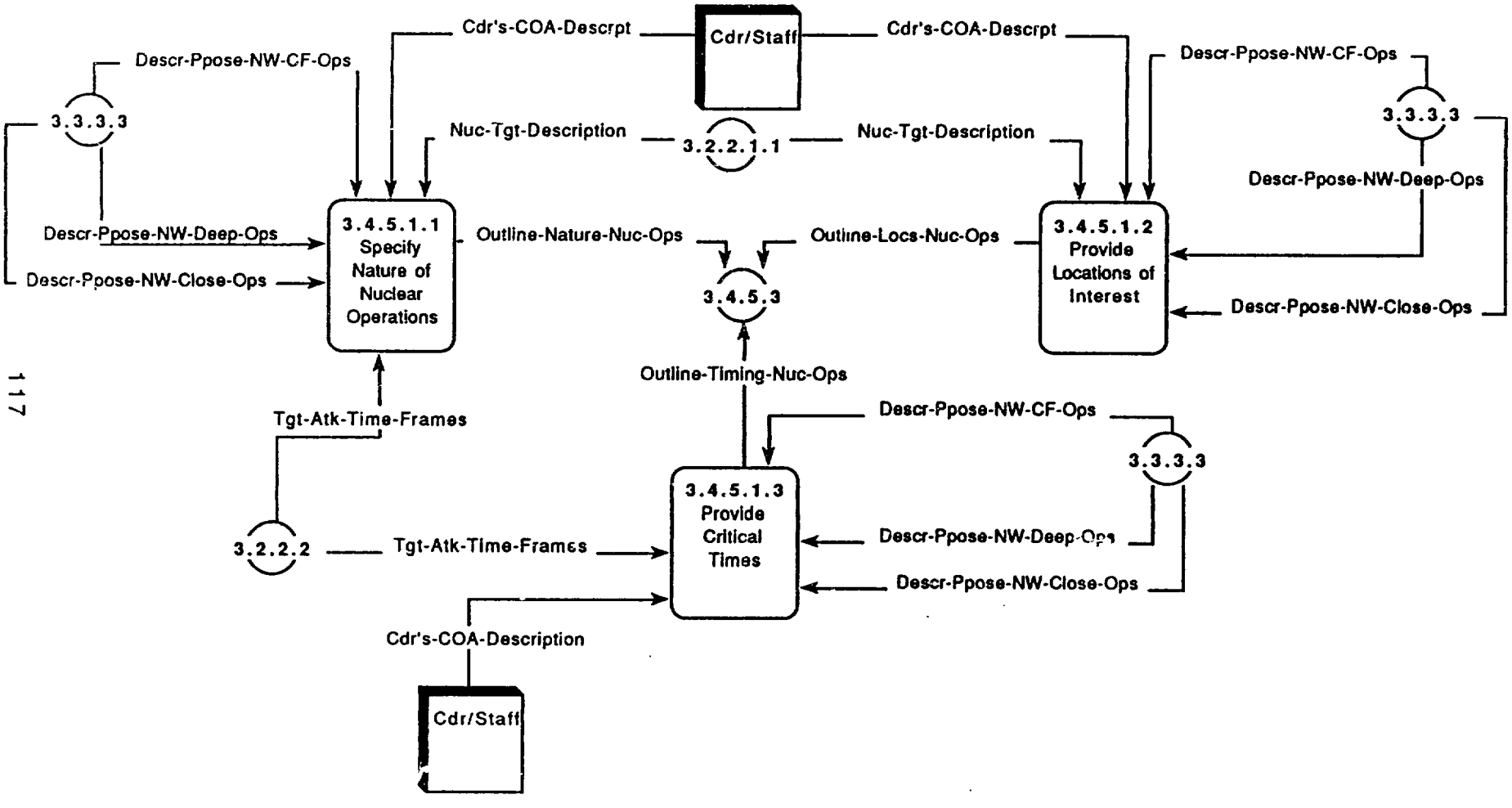
Specify Damage and Obstacle Preclusion #3.4.4.1



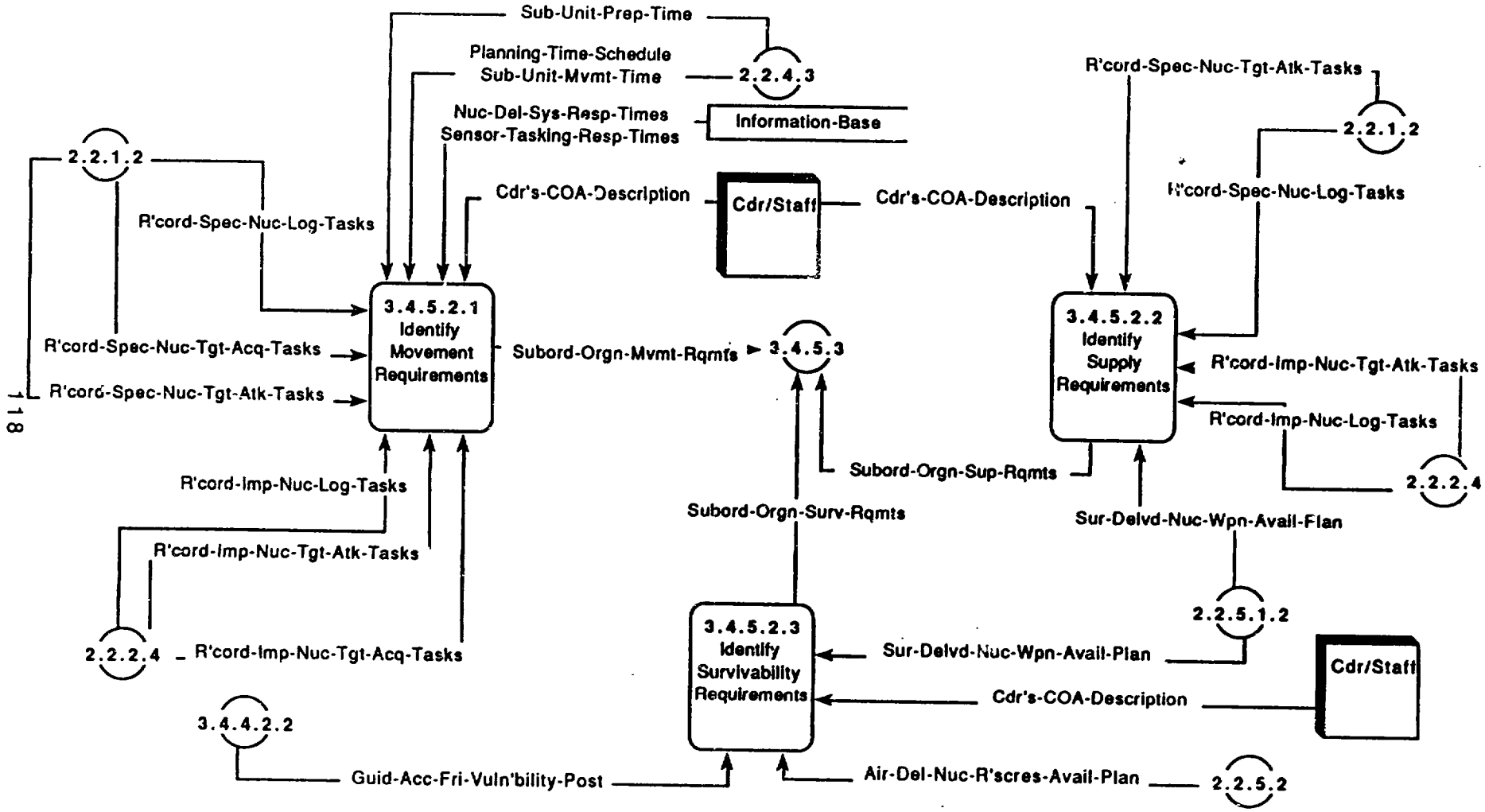
Announce Troop Safety #3.4.4.2



Prepare Suppl Warning Order Input #3.4.5

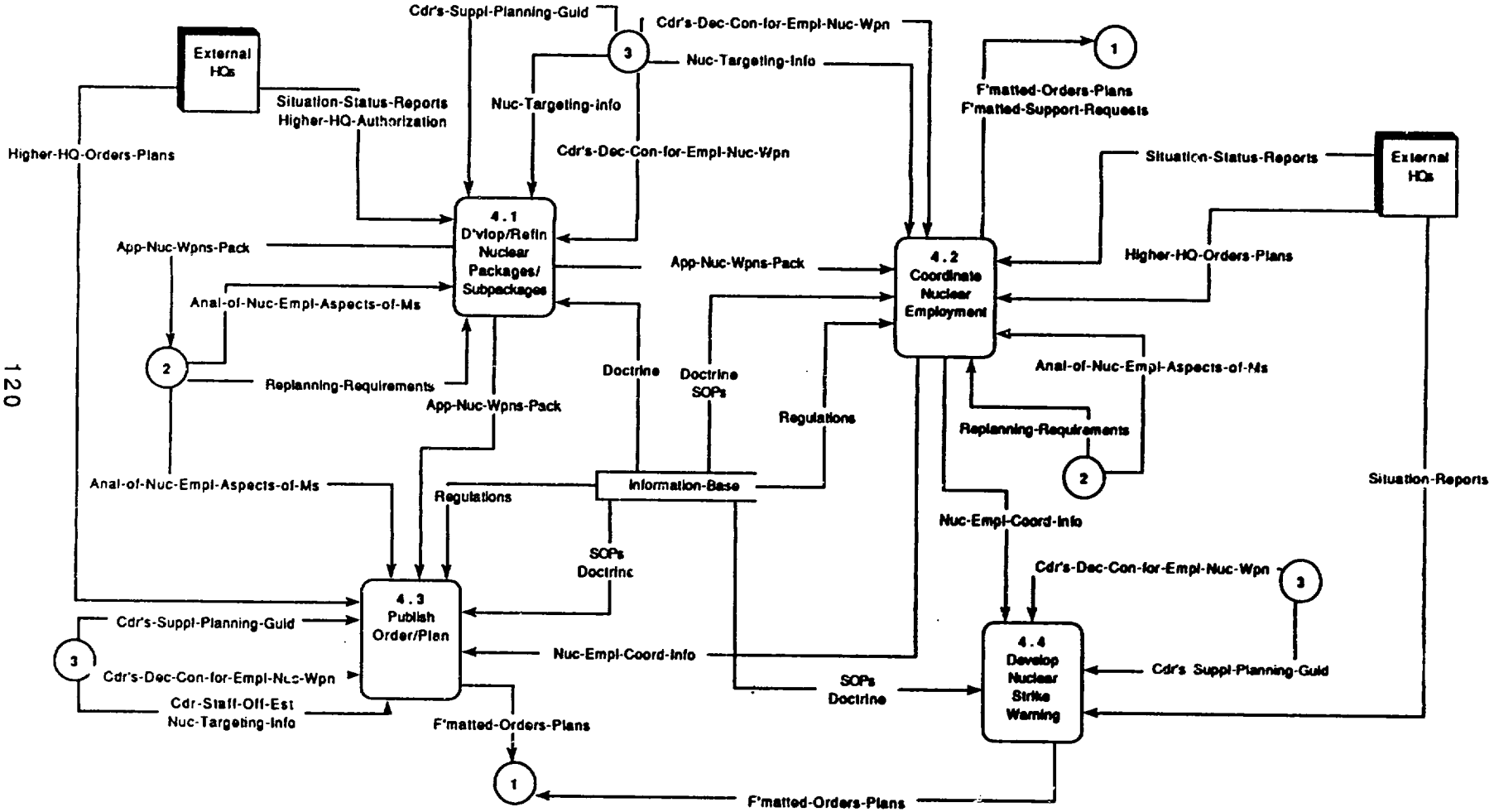


Outline Nuclear Contingencies #3.4.5.1

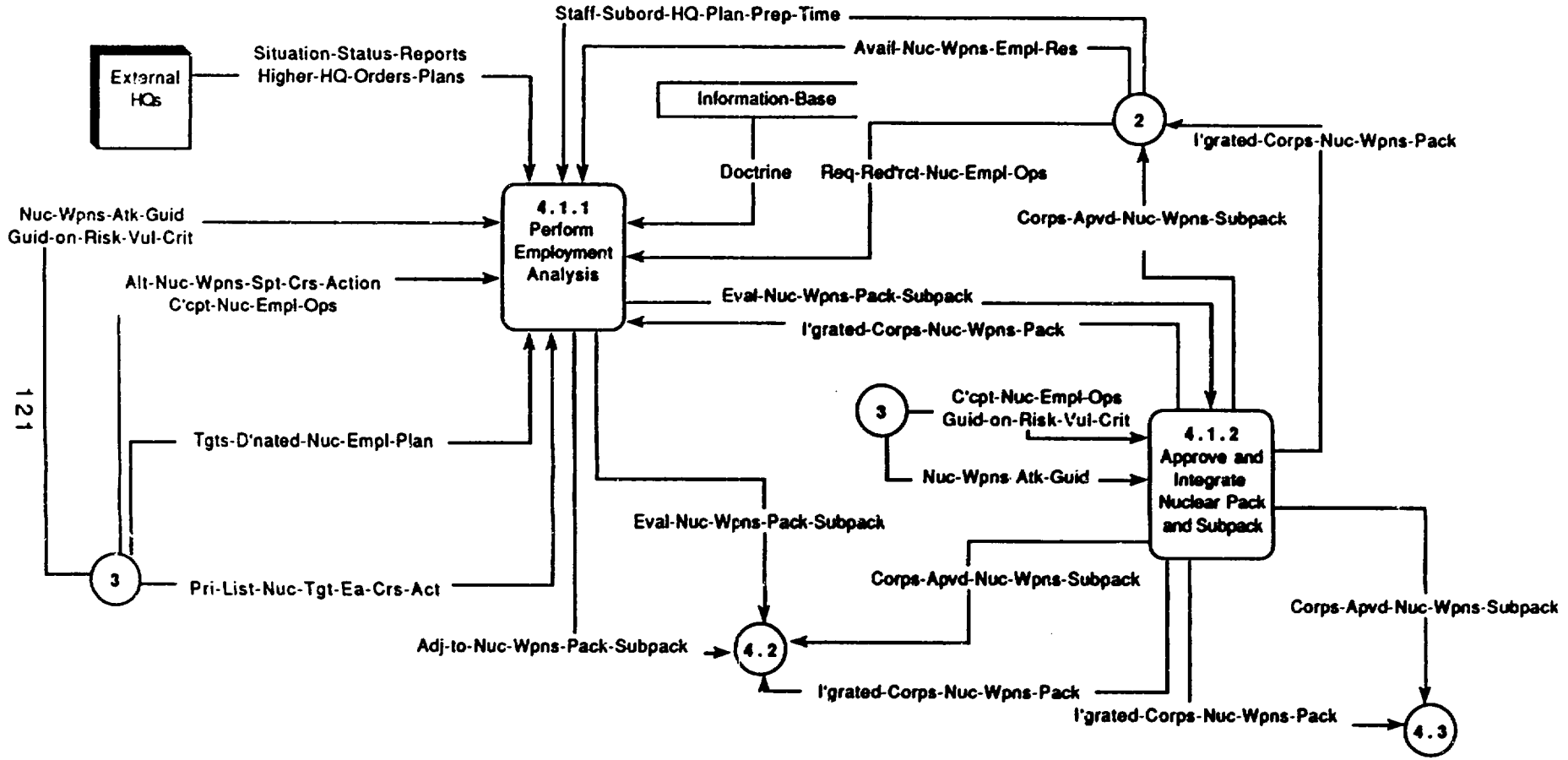


Identify Subordinate Organization Requirements #3.4.5.2

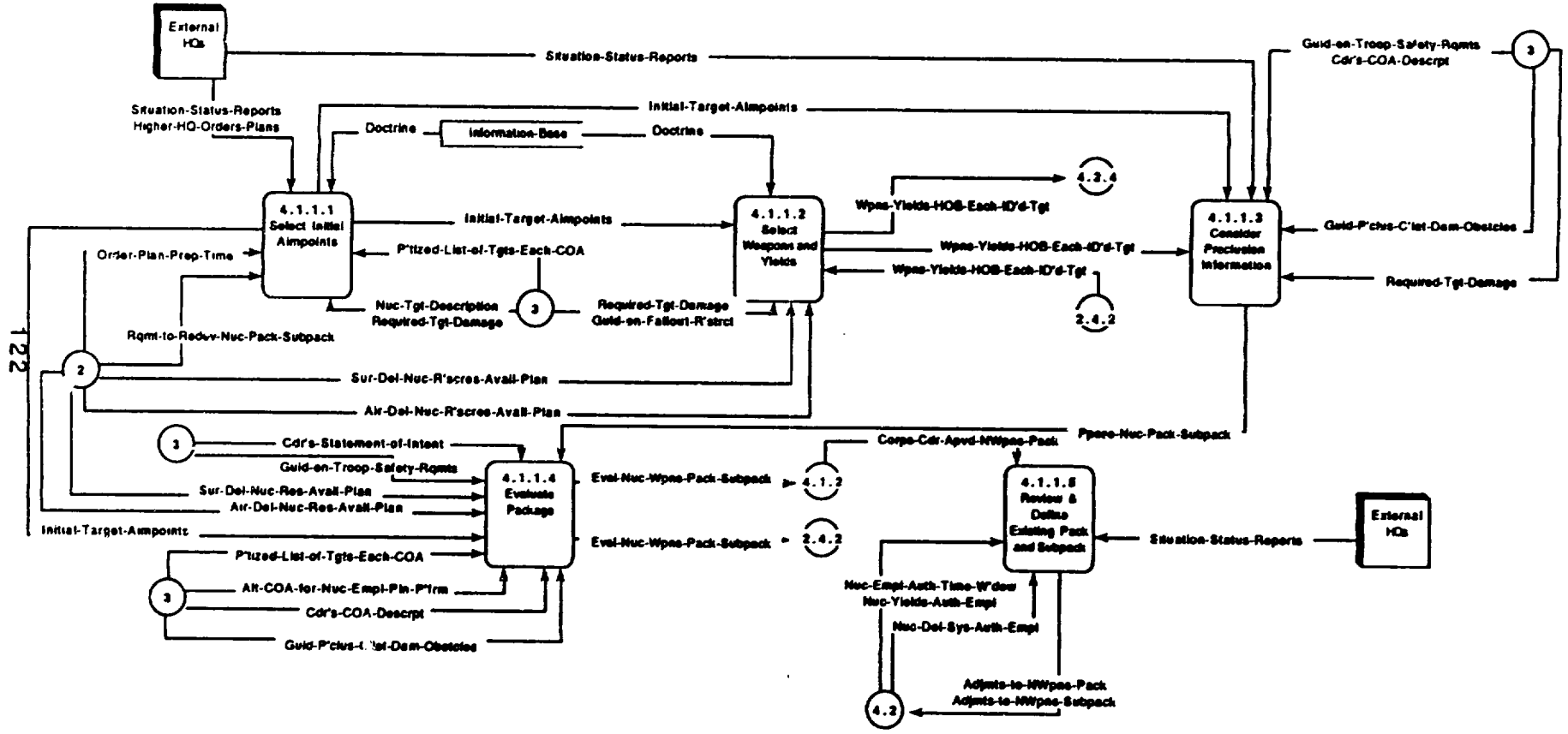
DIRECT NUCLEAR EMPLOYMENT OPERATIONS
(4.1 THROUGH 4.4.3.3)



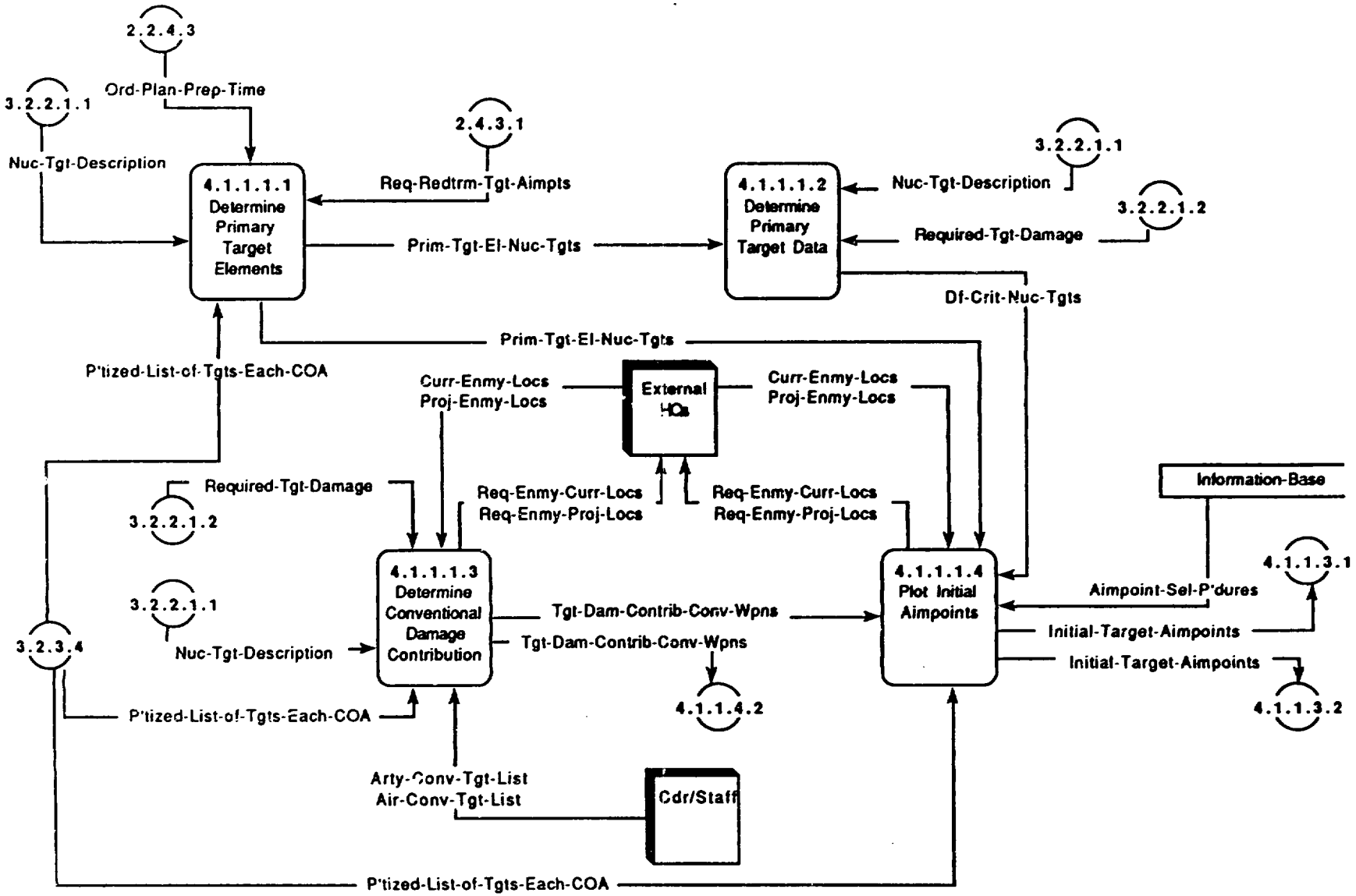
Direct Nuclear Employment Operations #4



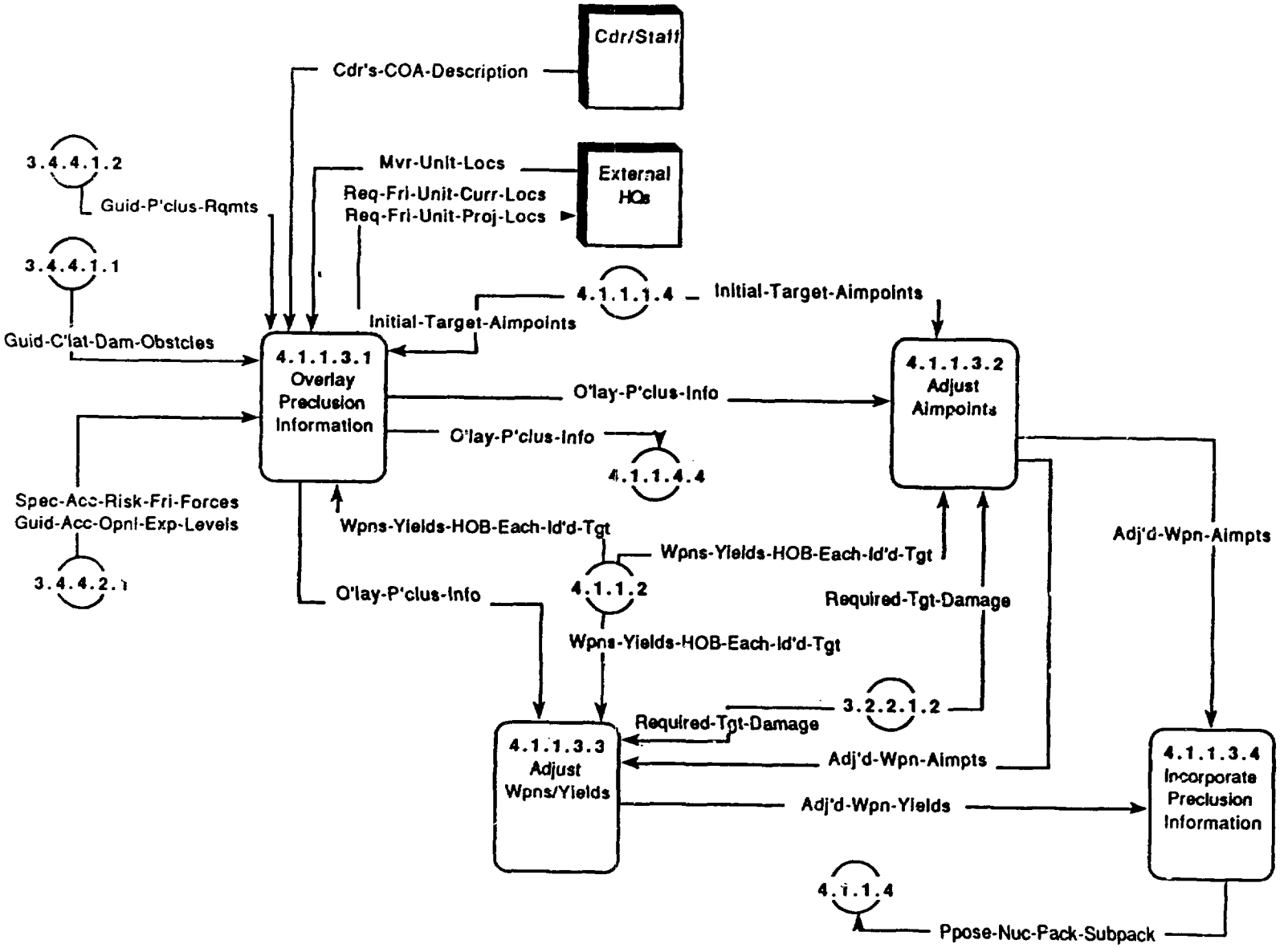
D'vlop/RefinNuclear Packages/ Subpackages #4.1



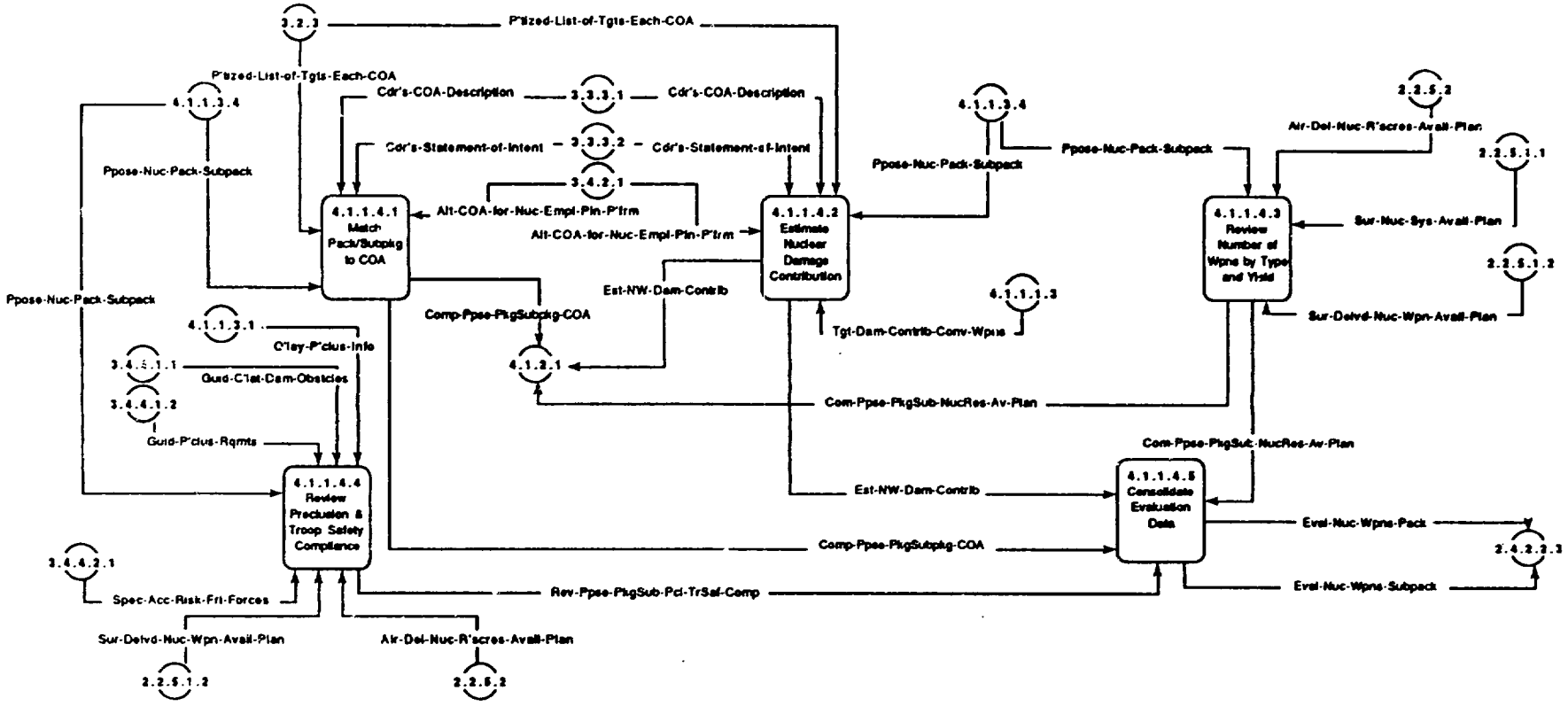
Perform Employment Analysis 84.1.1



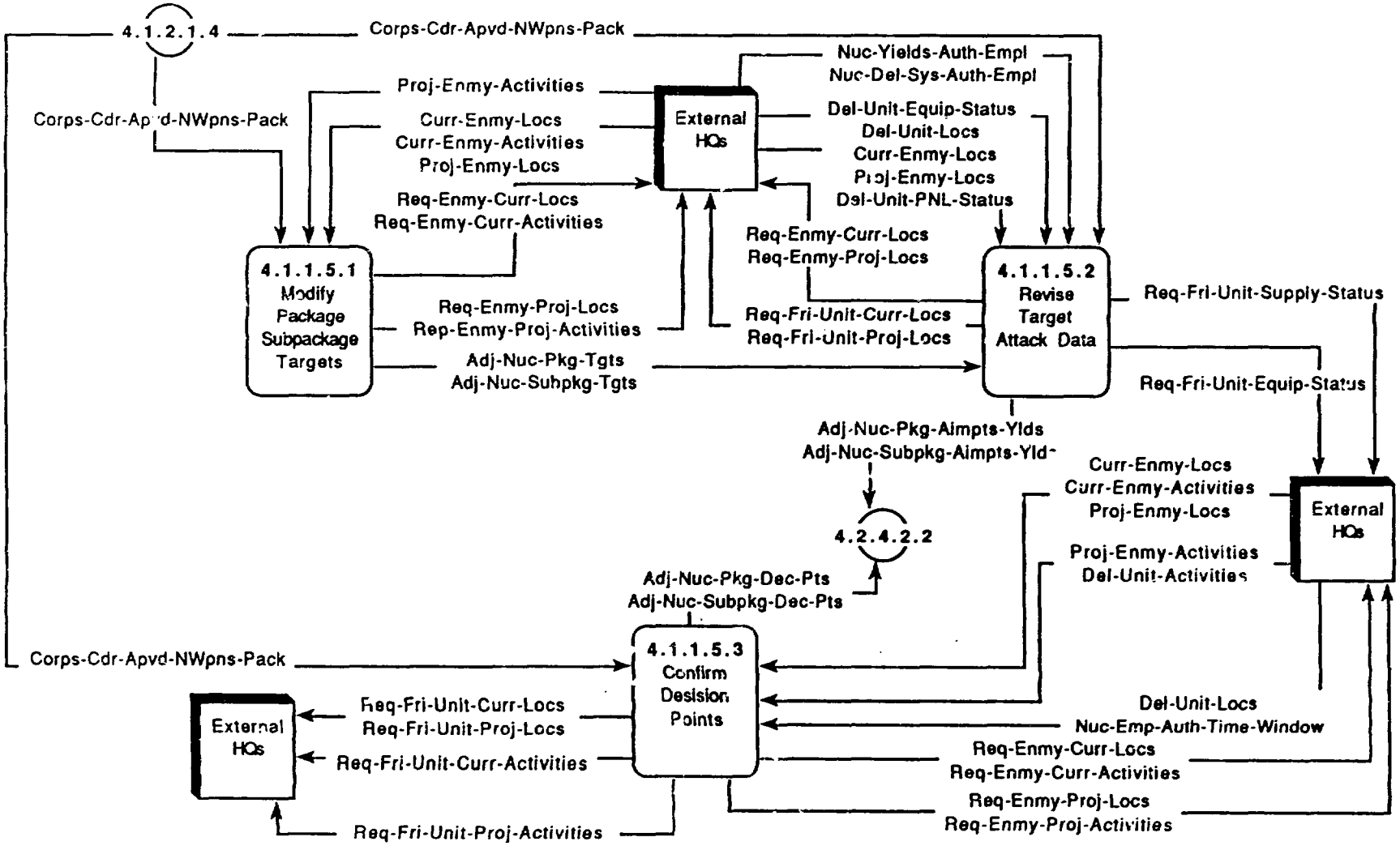
Select Initial Aimpoints #4.1.1.1



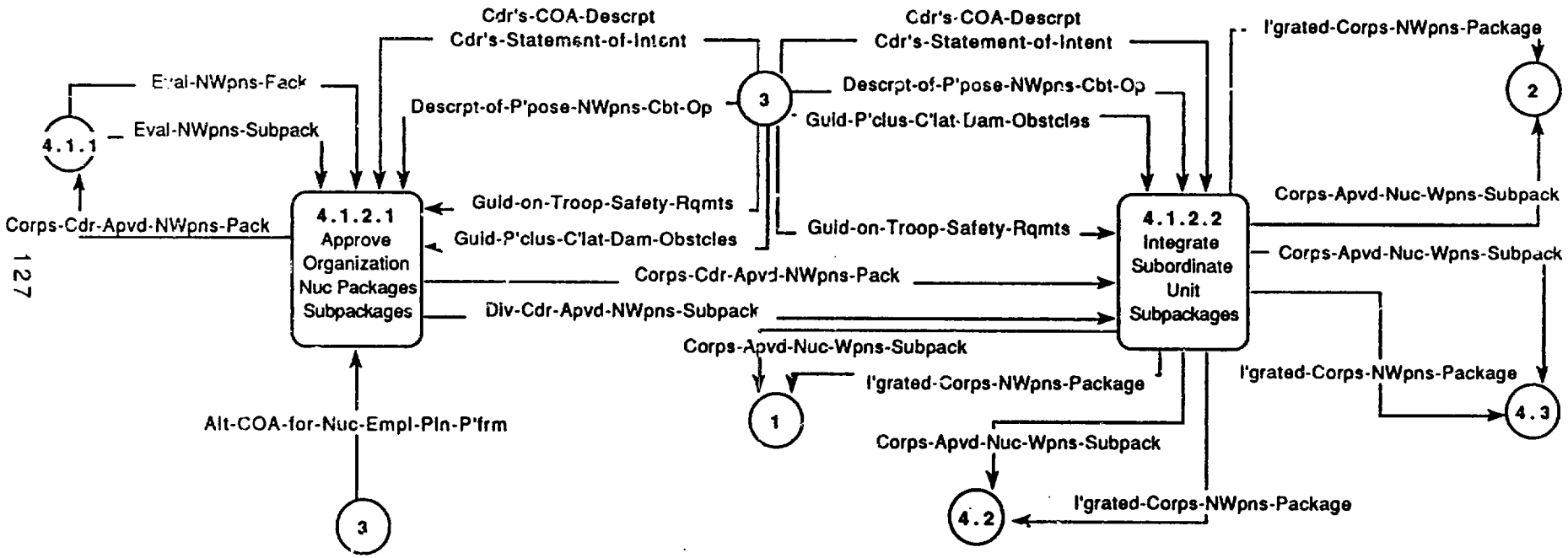
Consider Preclusion Information #4.1.1.3



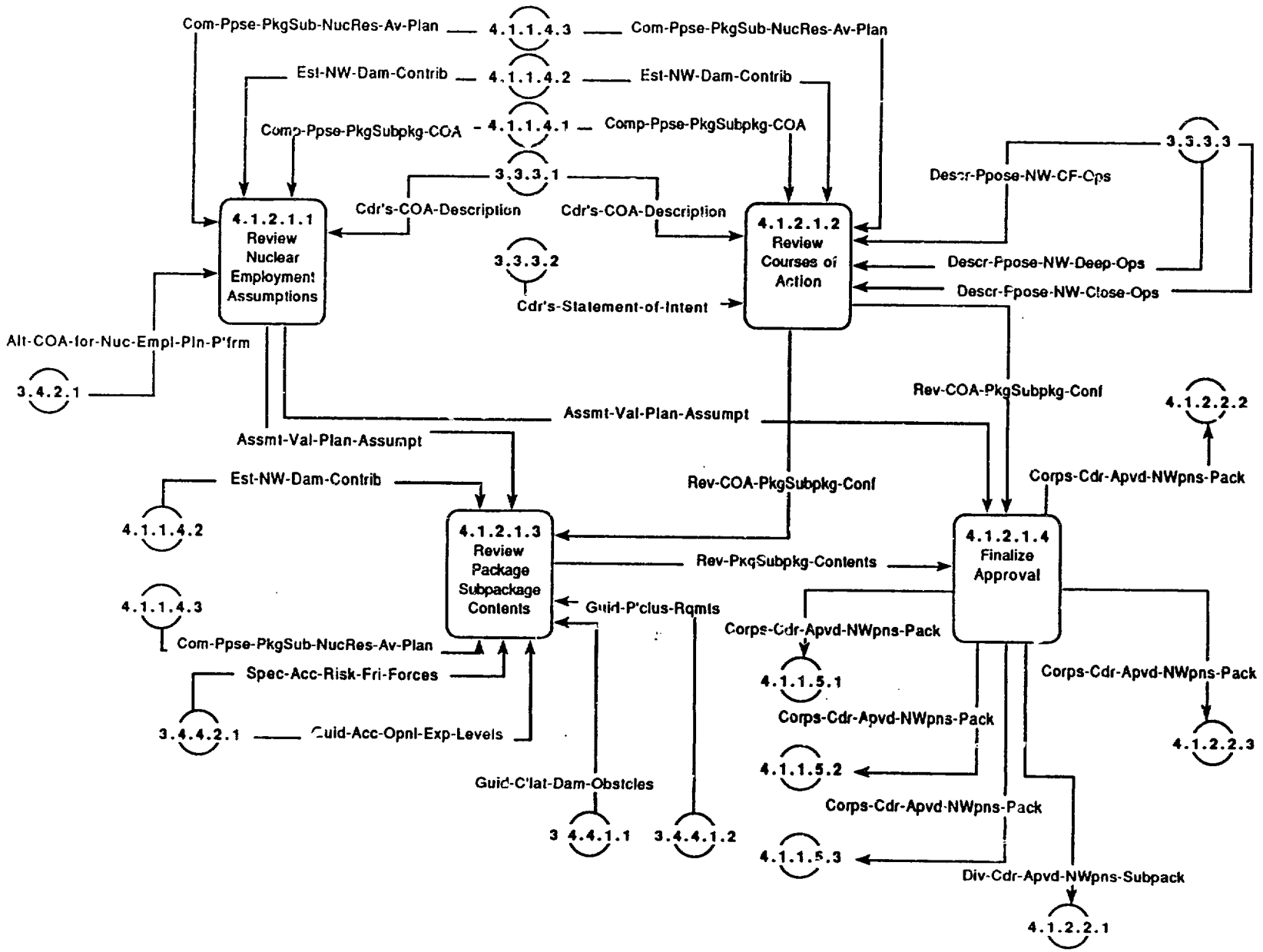
Evaluate Package #4.1.1.4



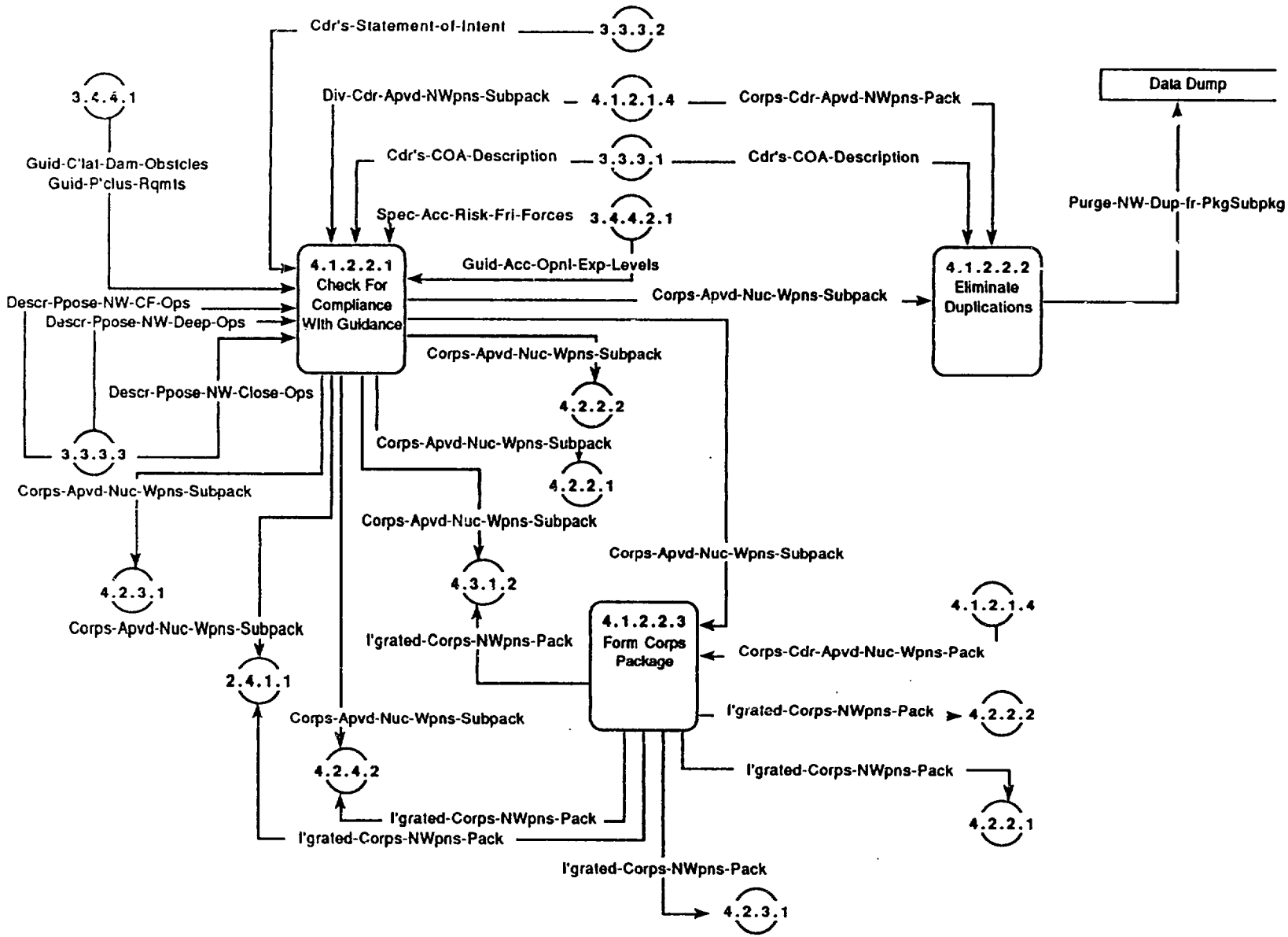
Rview & Define Existing Pack and Subpack #4.1.1.5



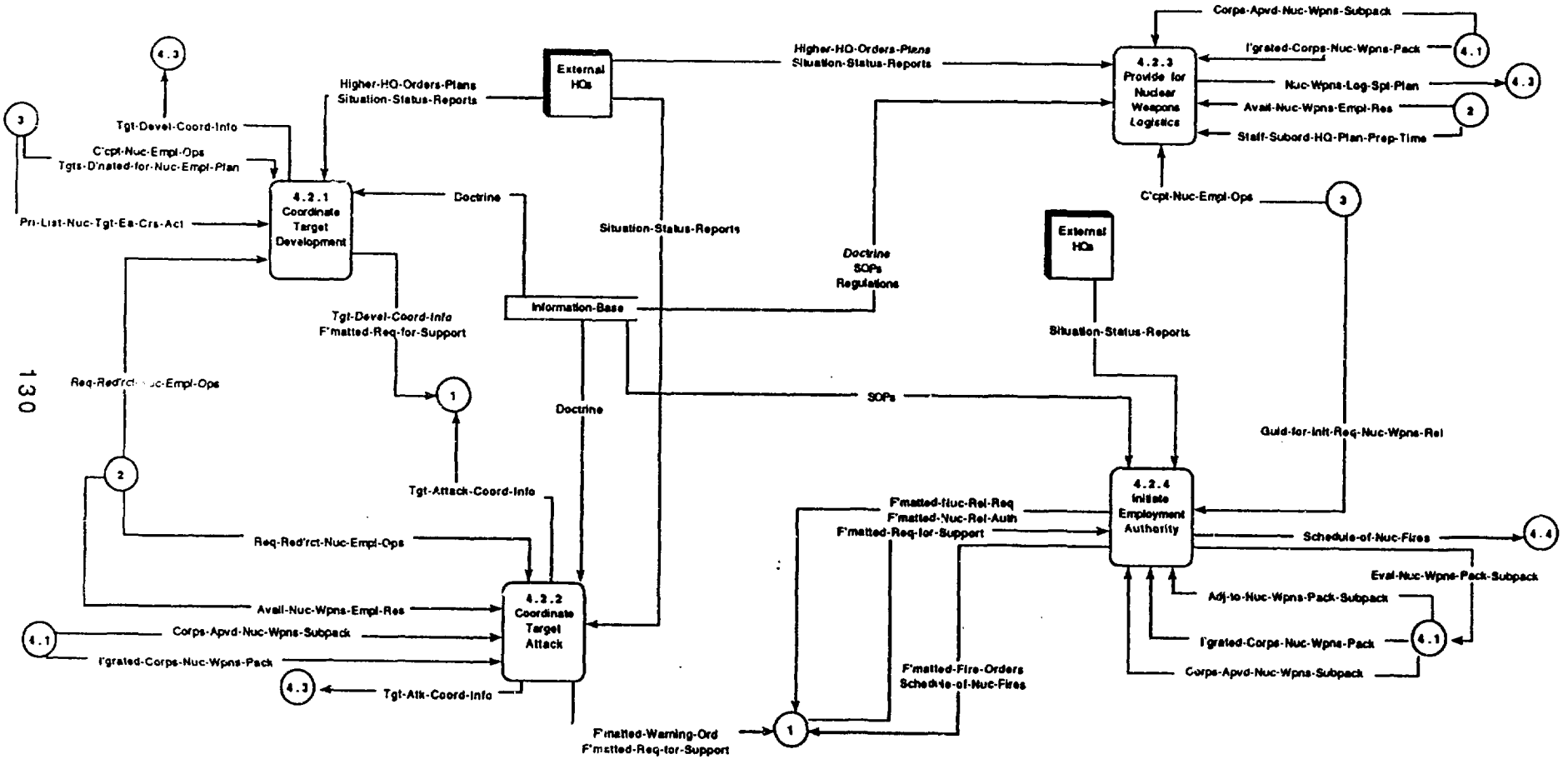
Approve and Integrate Nuclear Pack and Subpack #4.1.2



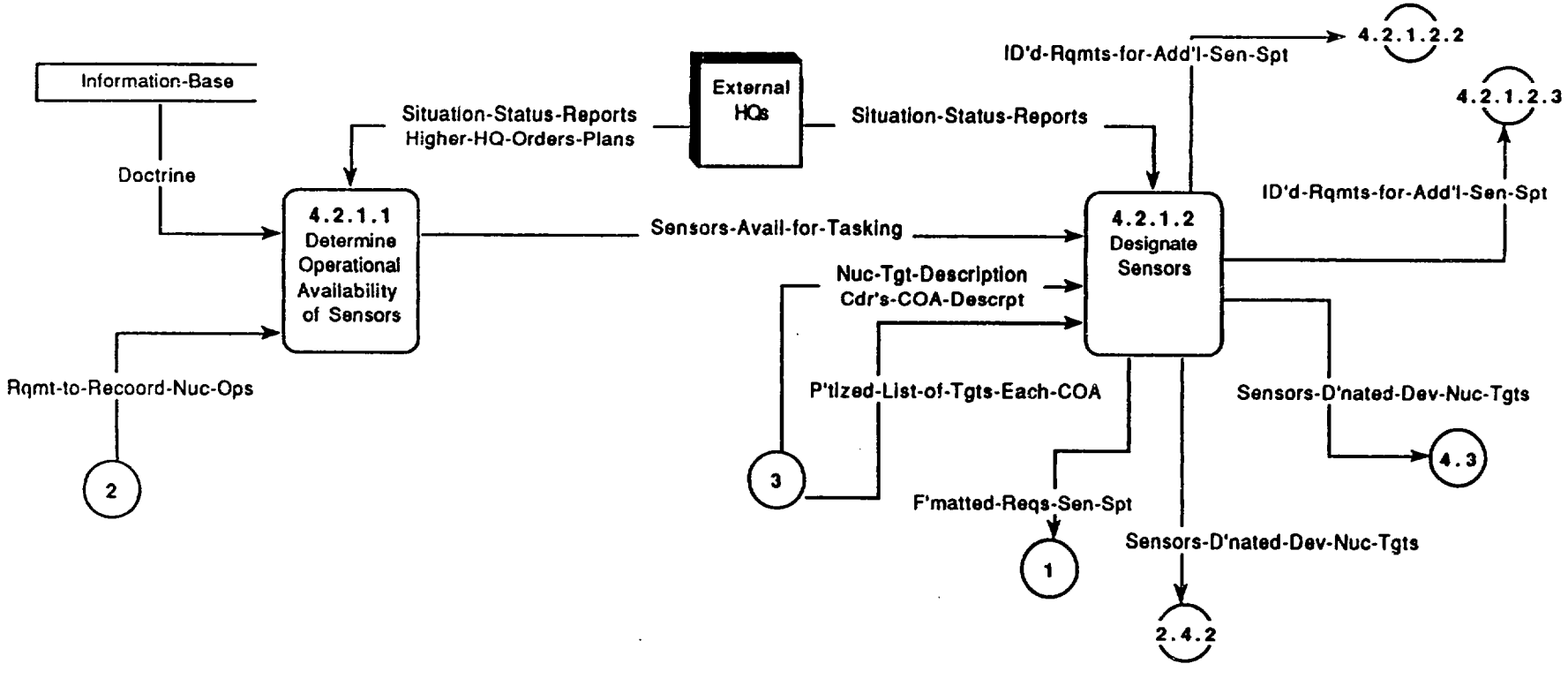
Approve Organization Nuc Packages Subpackages #4.1.2.1



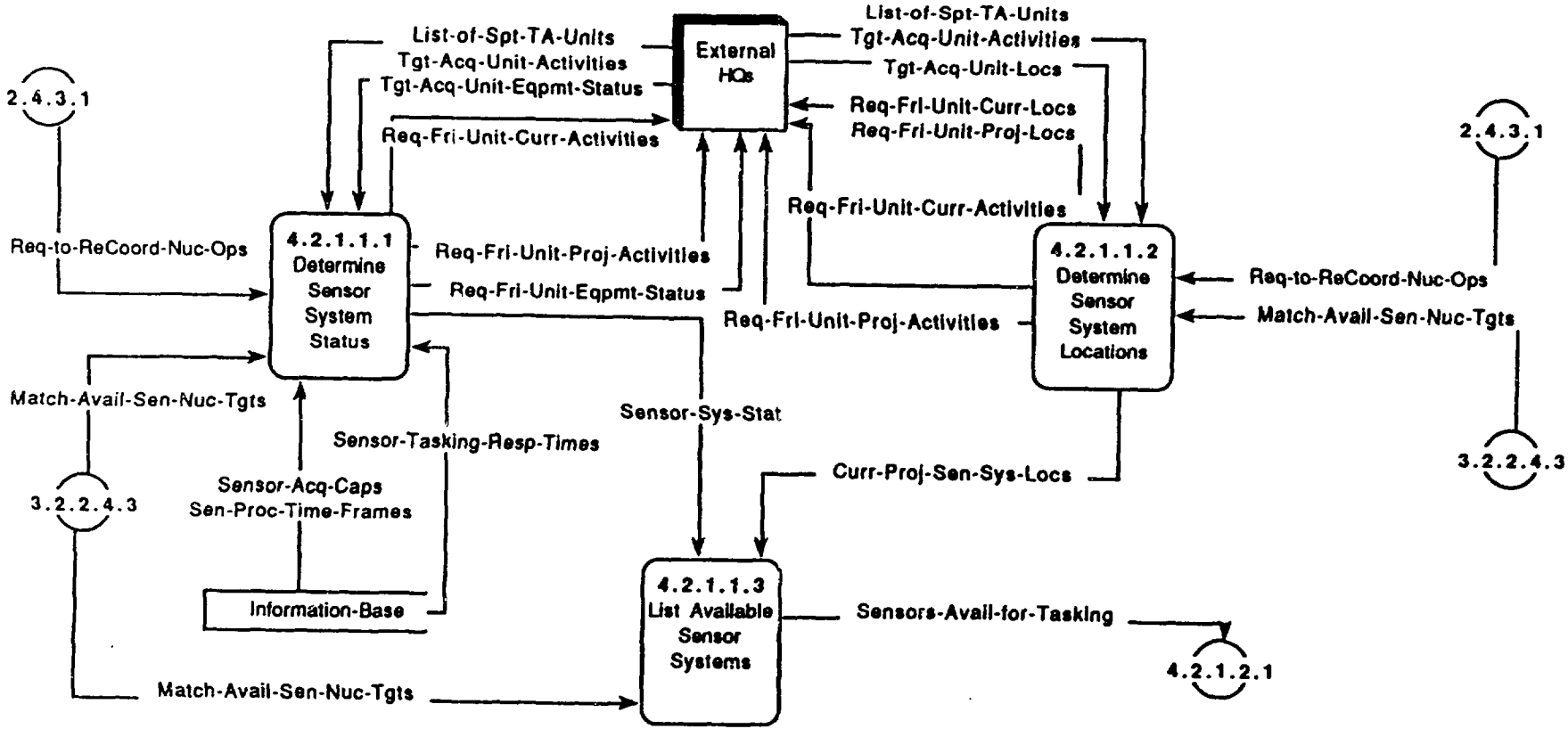
Integrate Subordinate Unit Subpackages #4.1.2.2



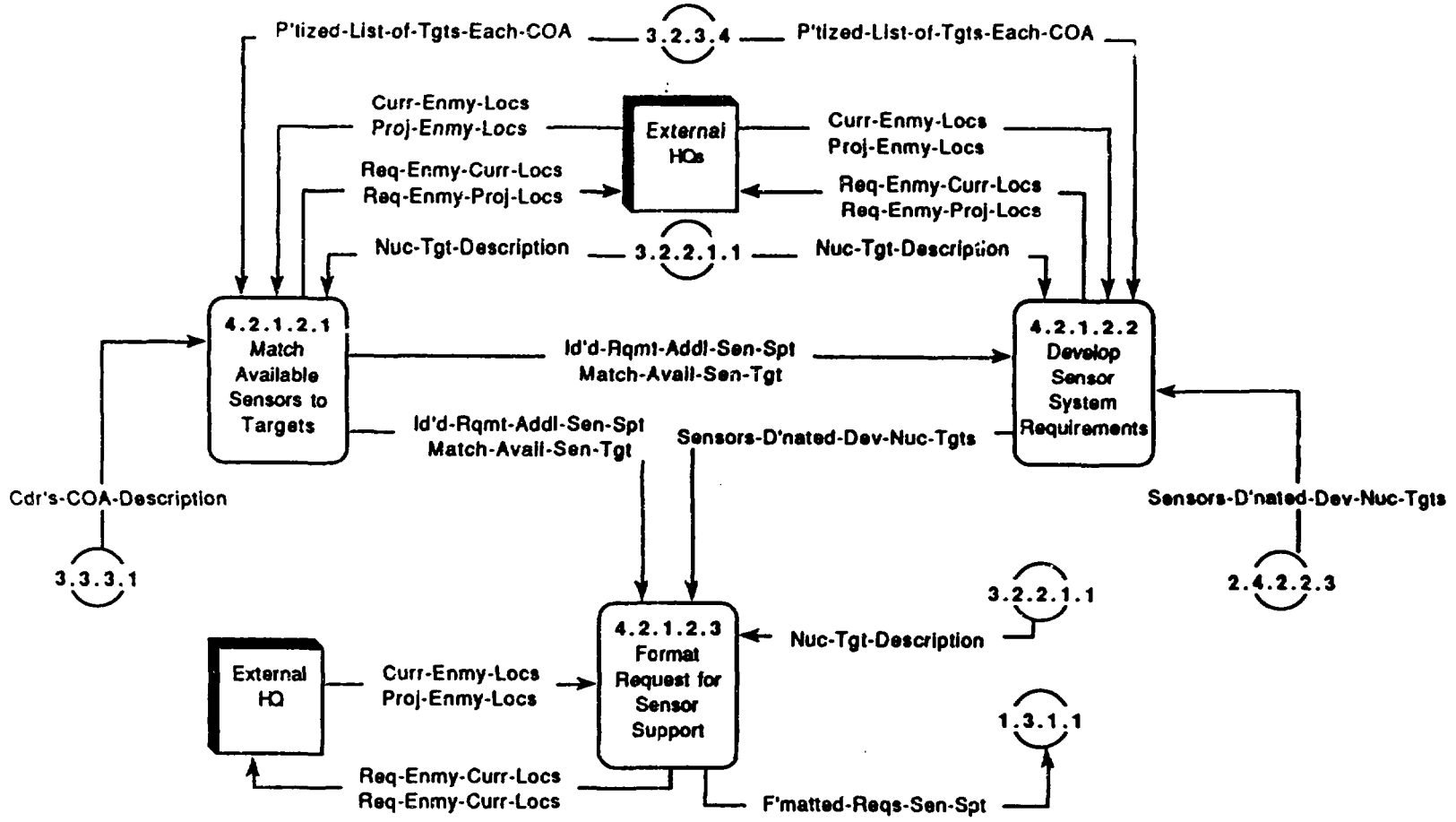
Coordinate Nuclear Employment #4.2



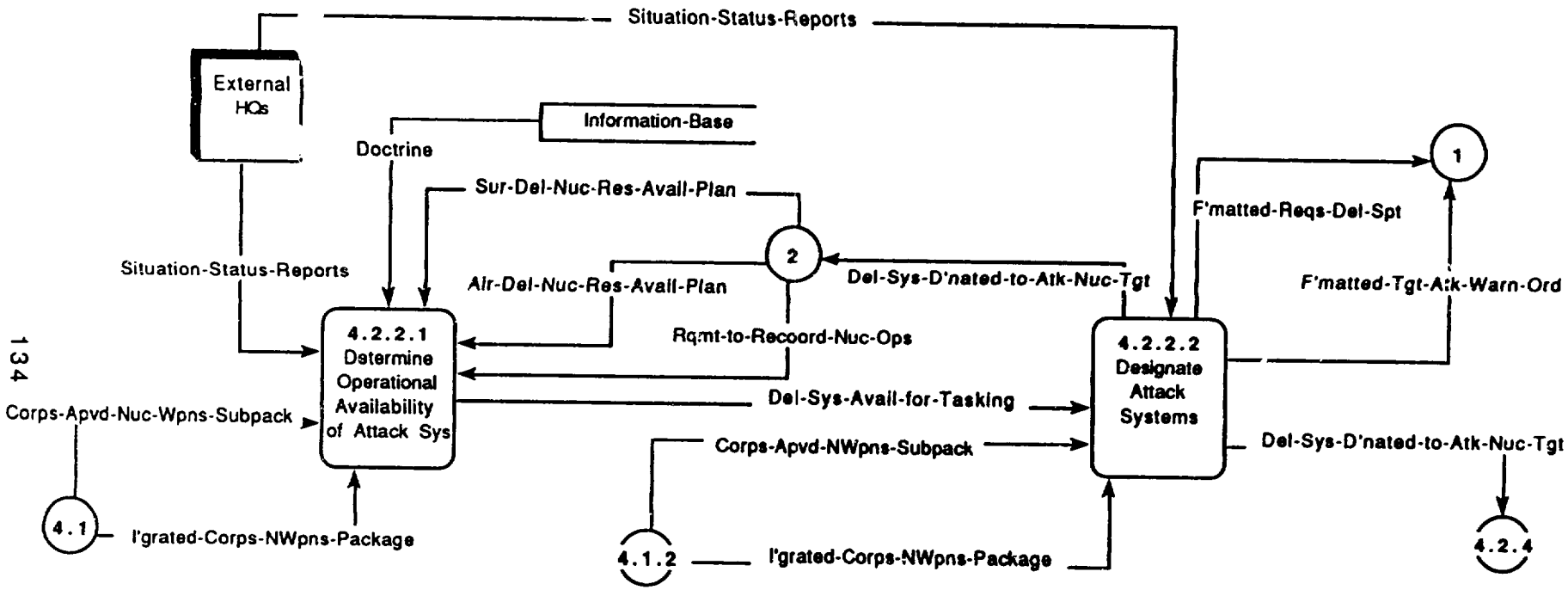
Coordinate Target Development #4.2.1



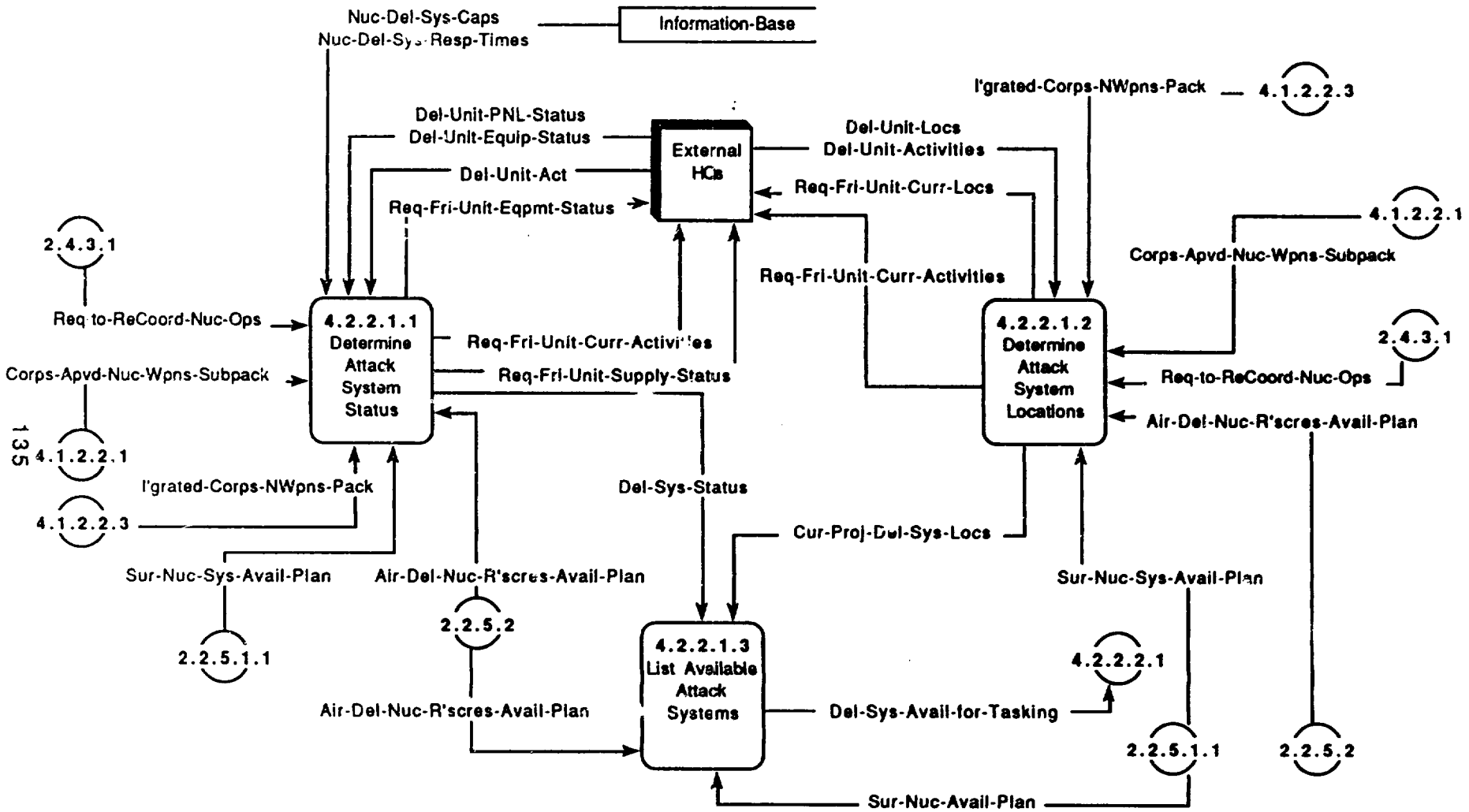
Determine Operational Availability of Sensors #4.2.1.1



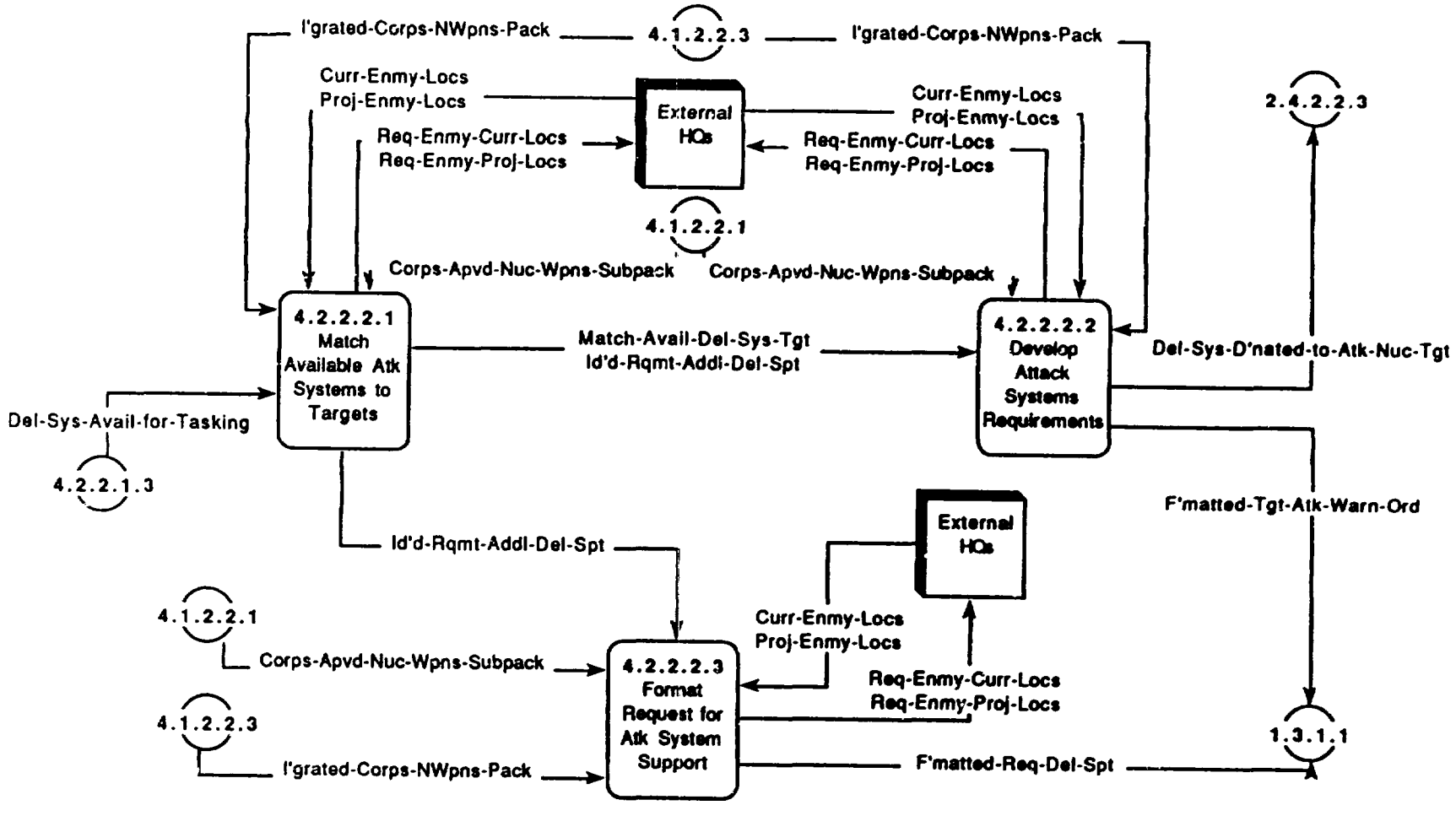
Designate Sensors #4.2.1.2



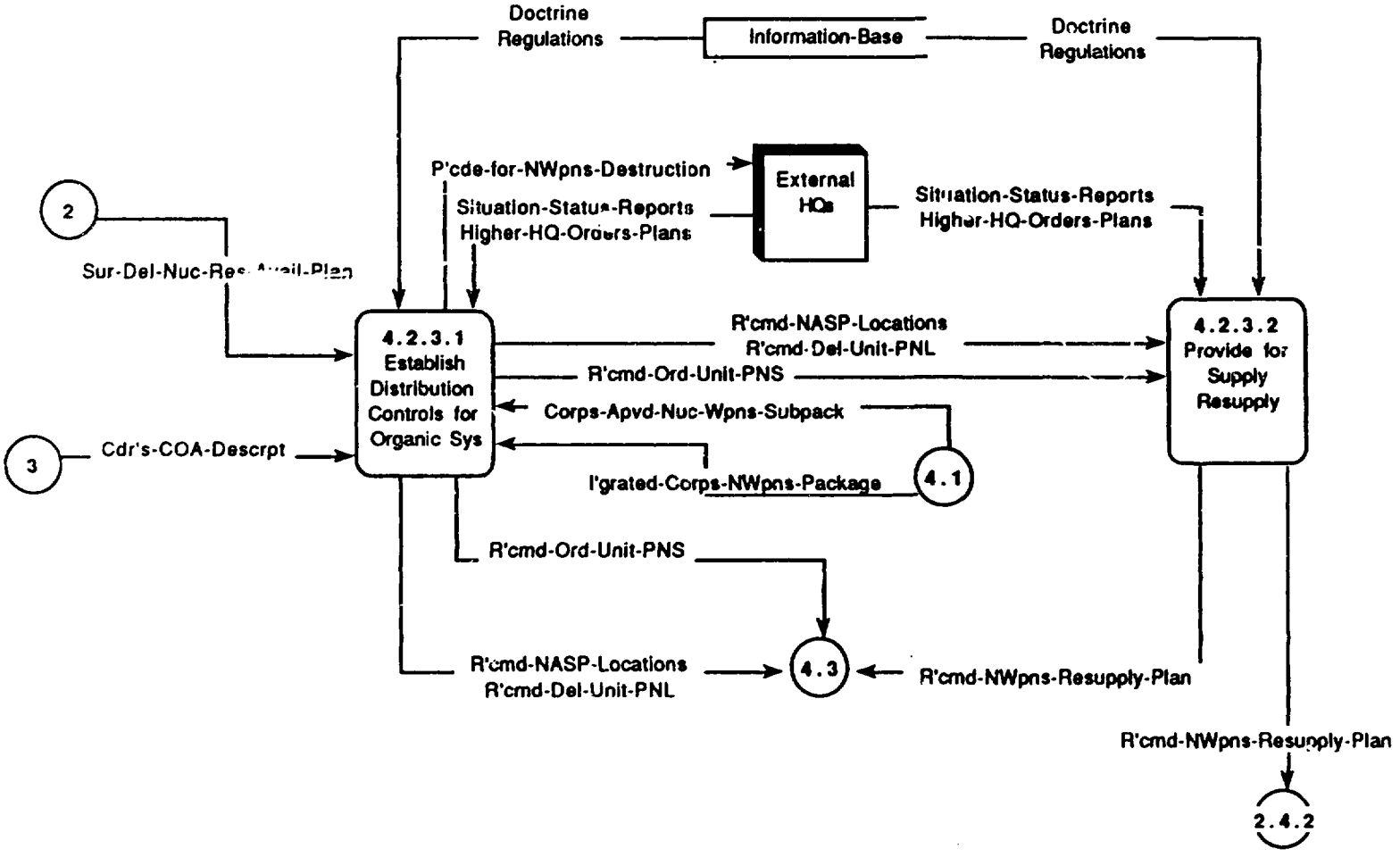
Coordinate Target Attack #4.2.2



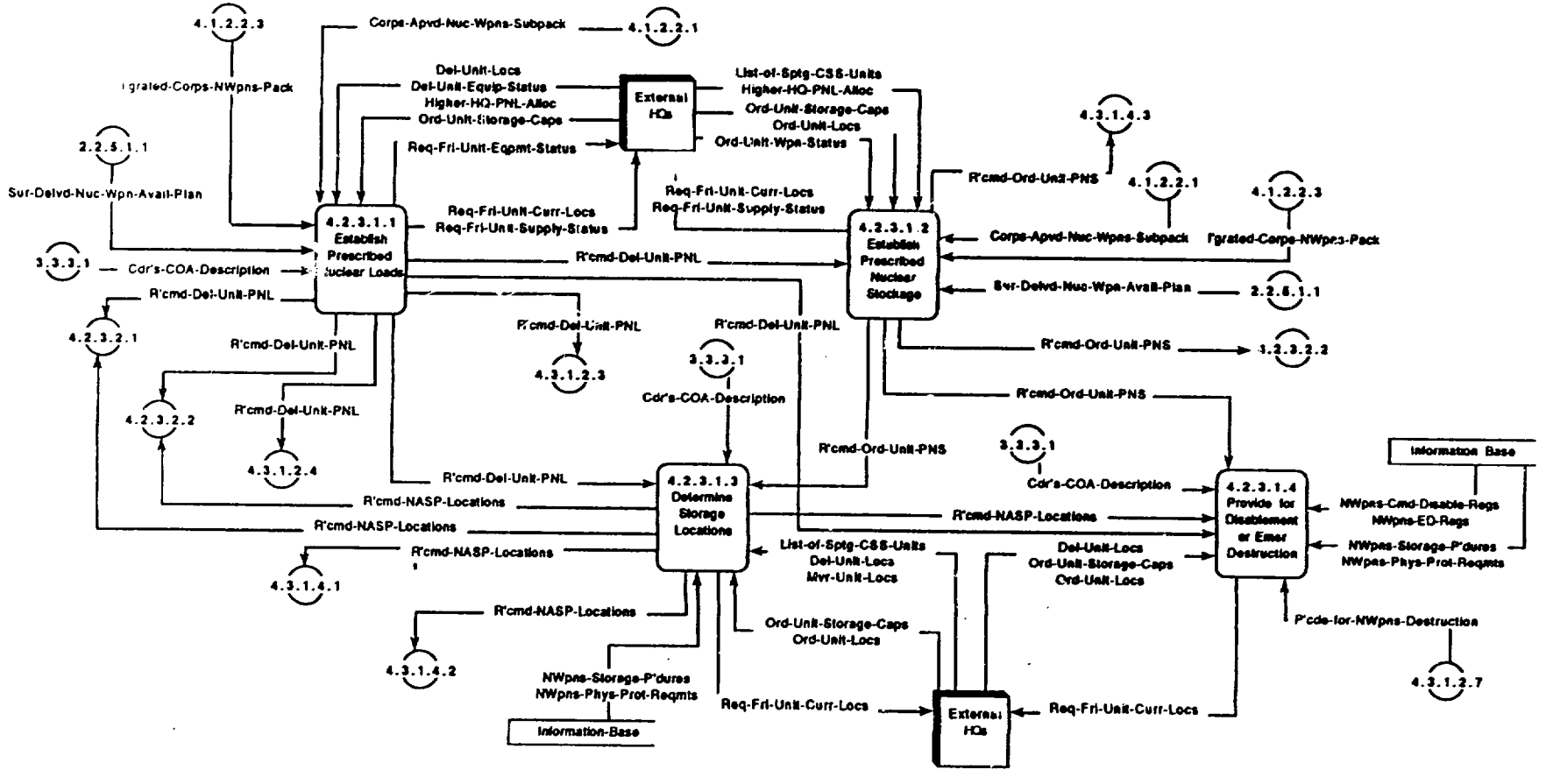
Determine Operational Availability of Attack Sys #4.2.2.1



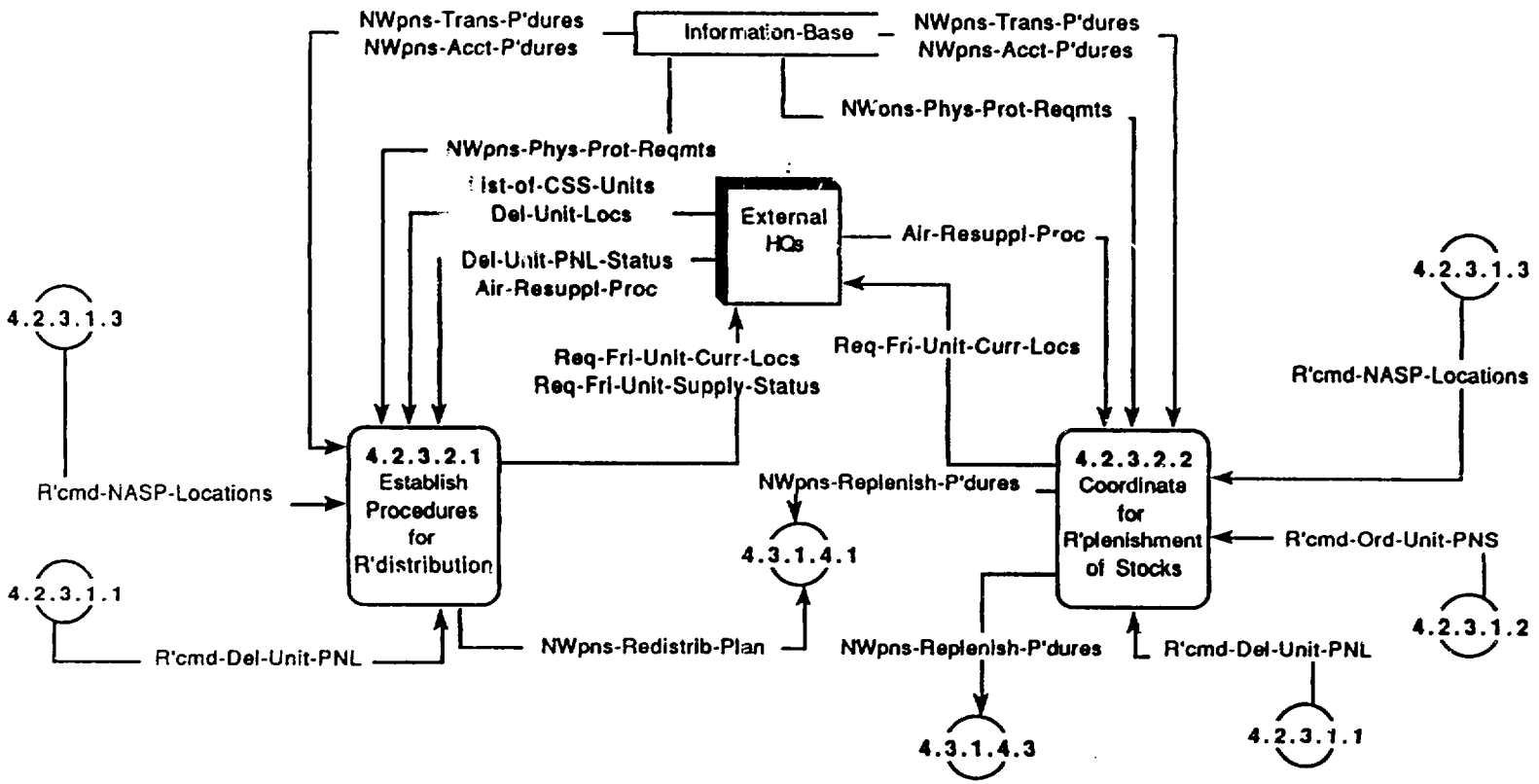
Designate Attack Systems #4.2.2.2



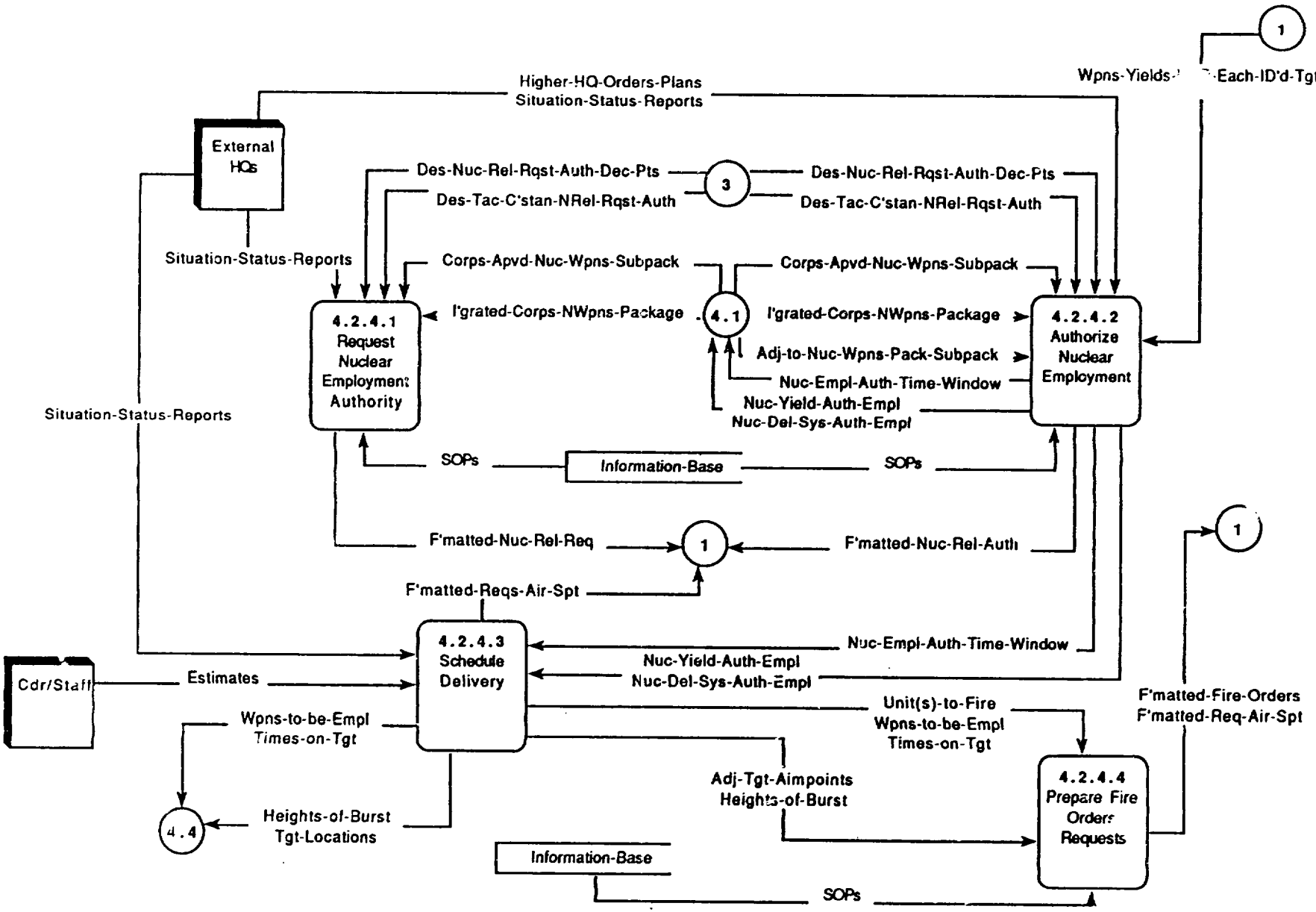
Provide for Nuclear Weapons Logistics #4.2.3



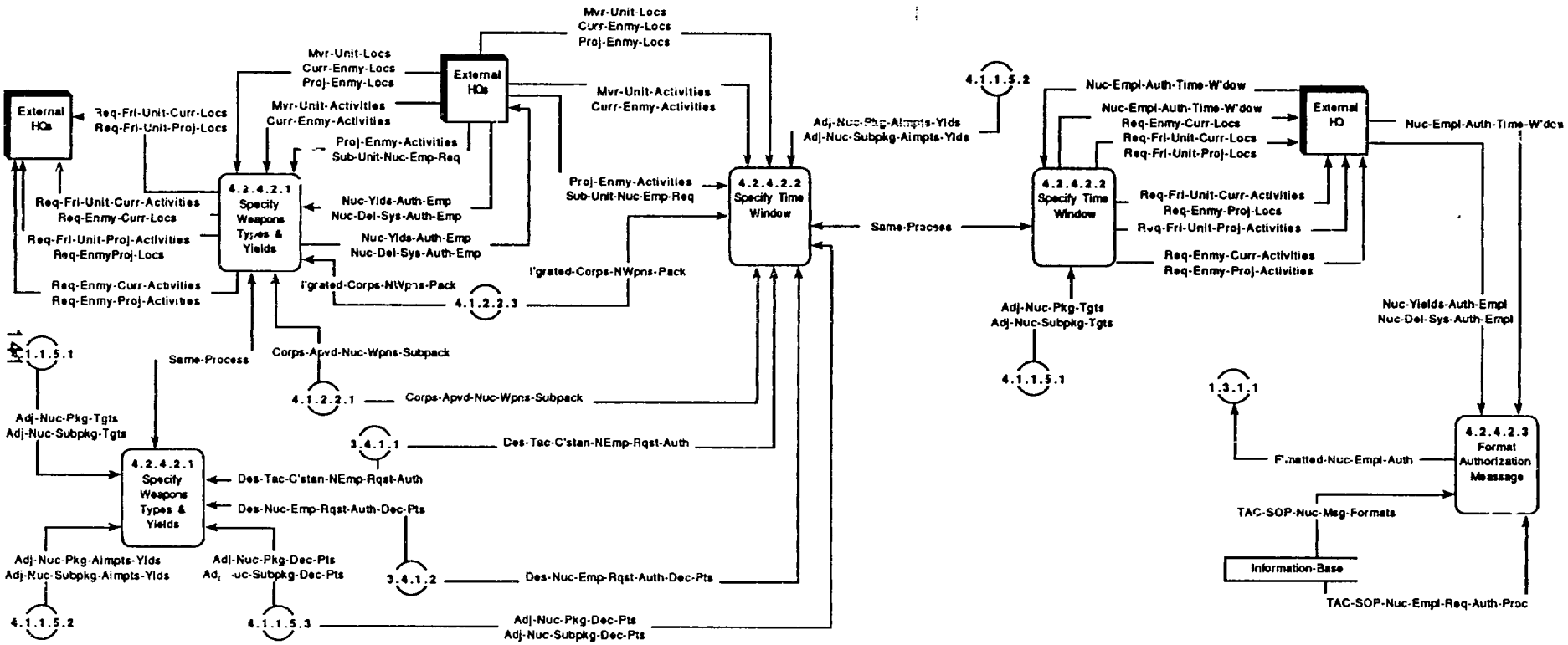
Establish Distribution Controls for Organic Sys #4.2.3.1



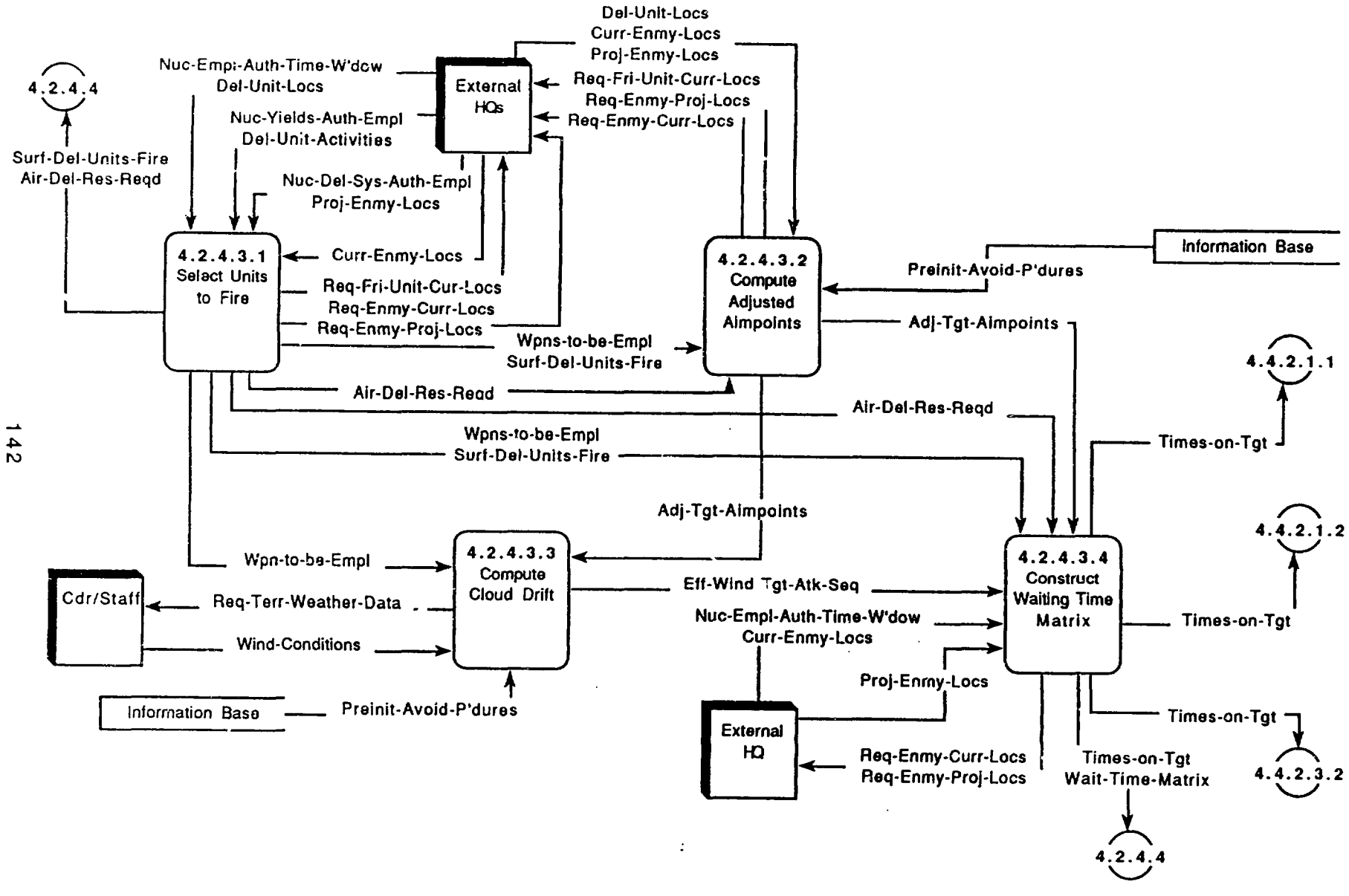
Provide for Supply Resupply #4.2.3.2



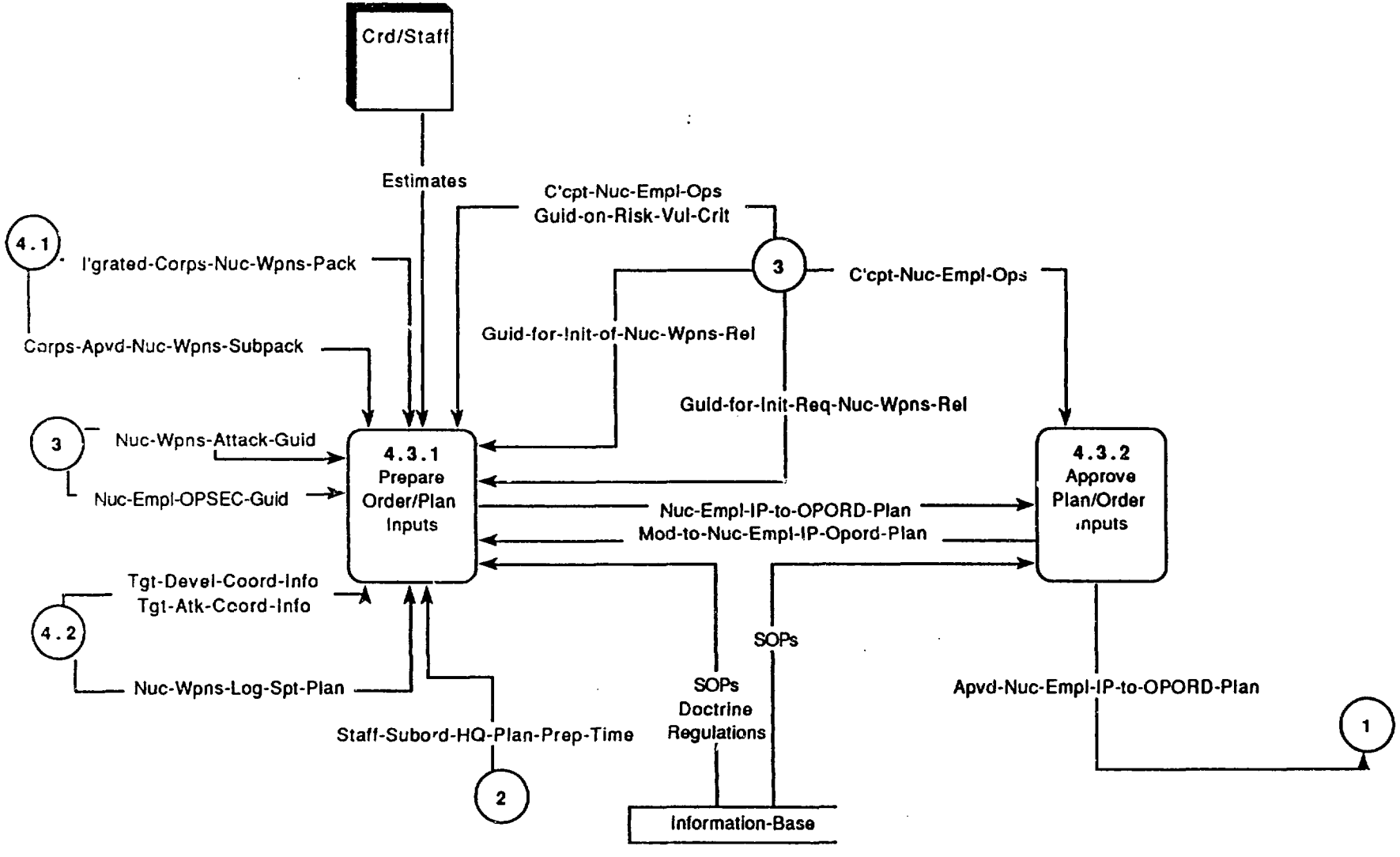
Initiate Employment Authority #4.2.4



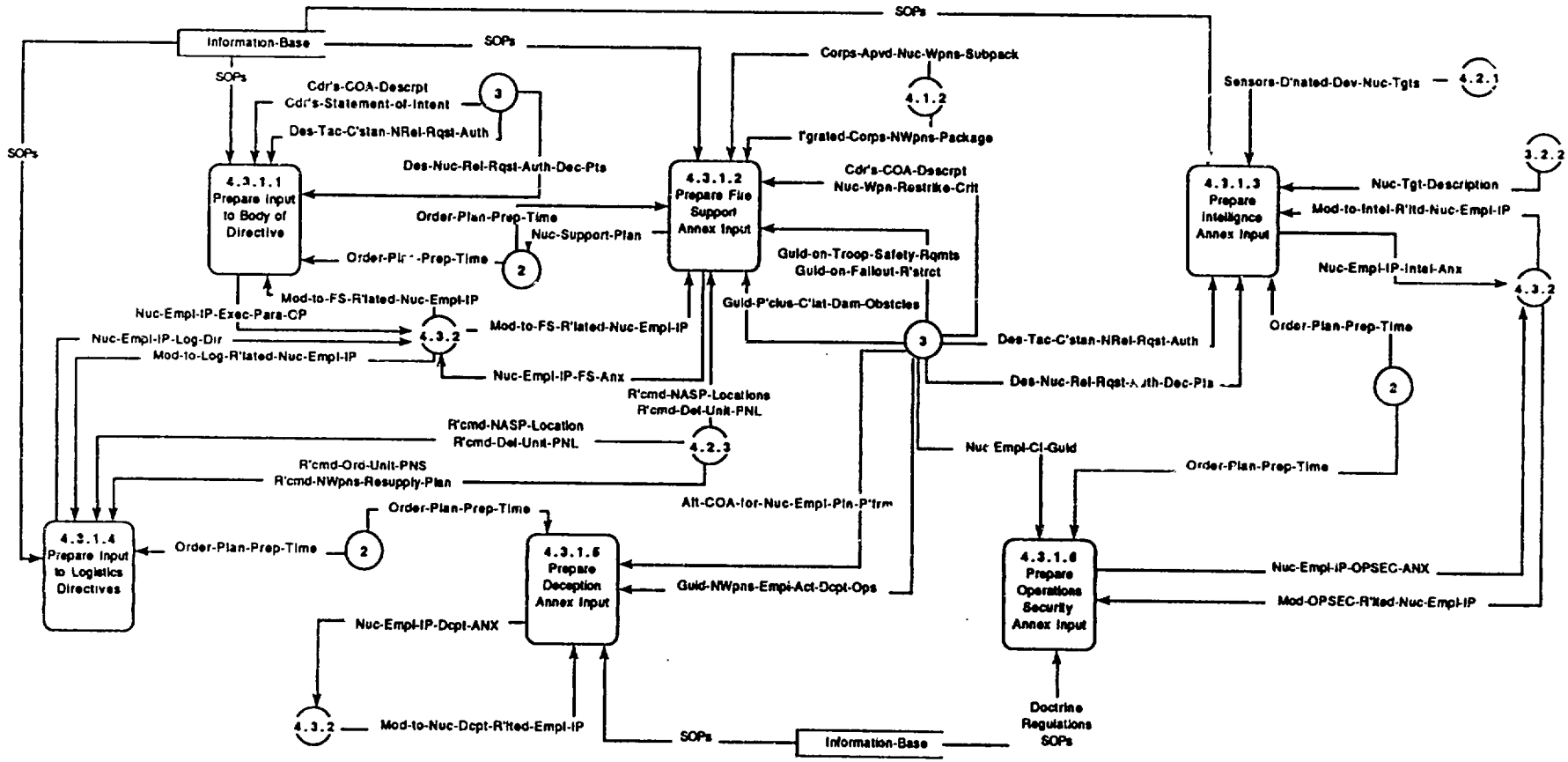
Authorize Nuclear Employment #4.2.4.2



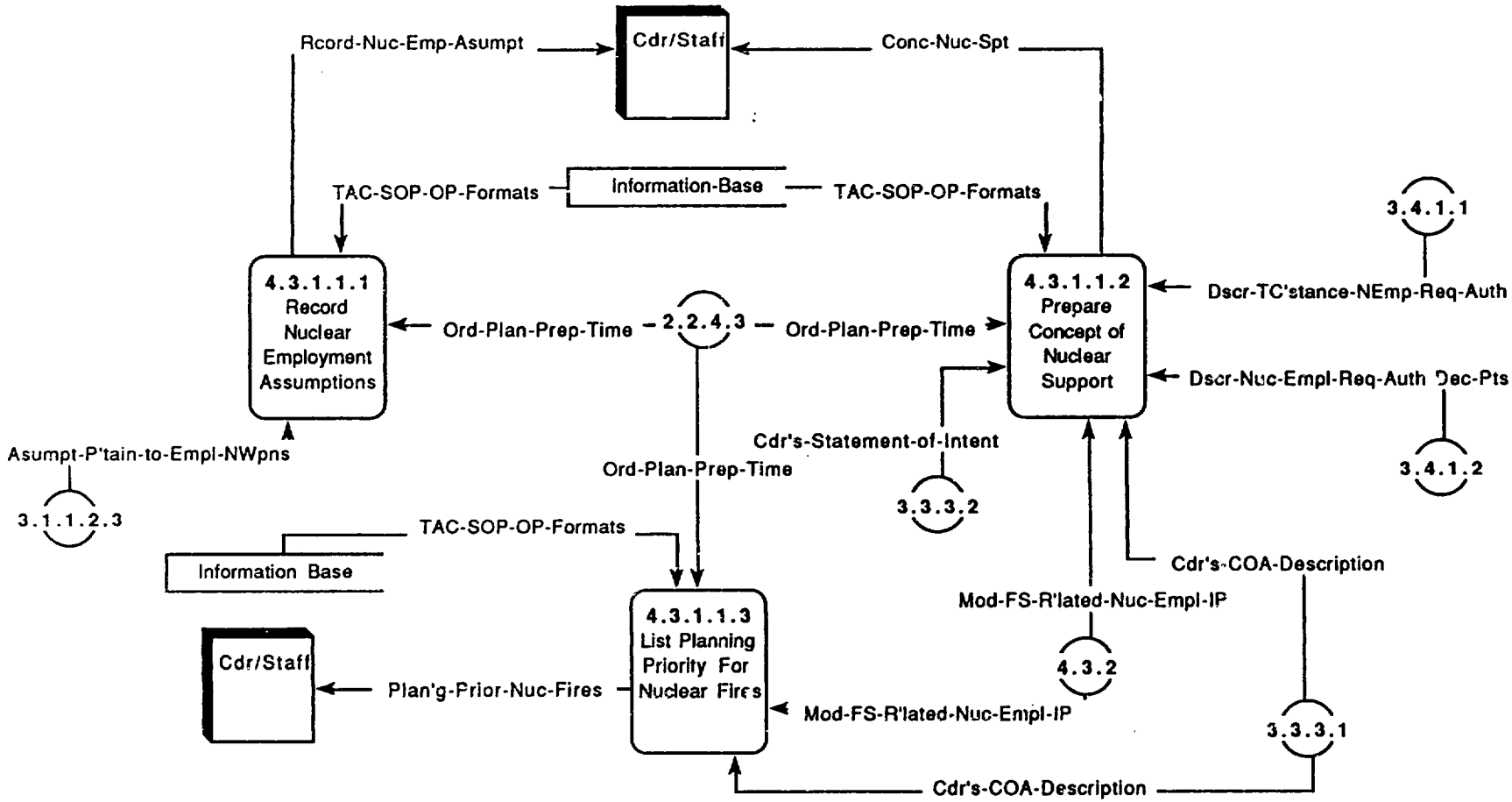
Schedule Delivery #4.2.4.3



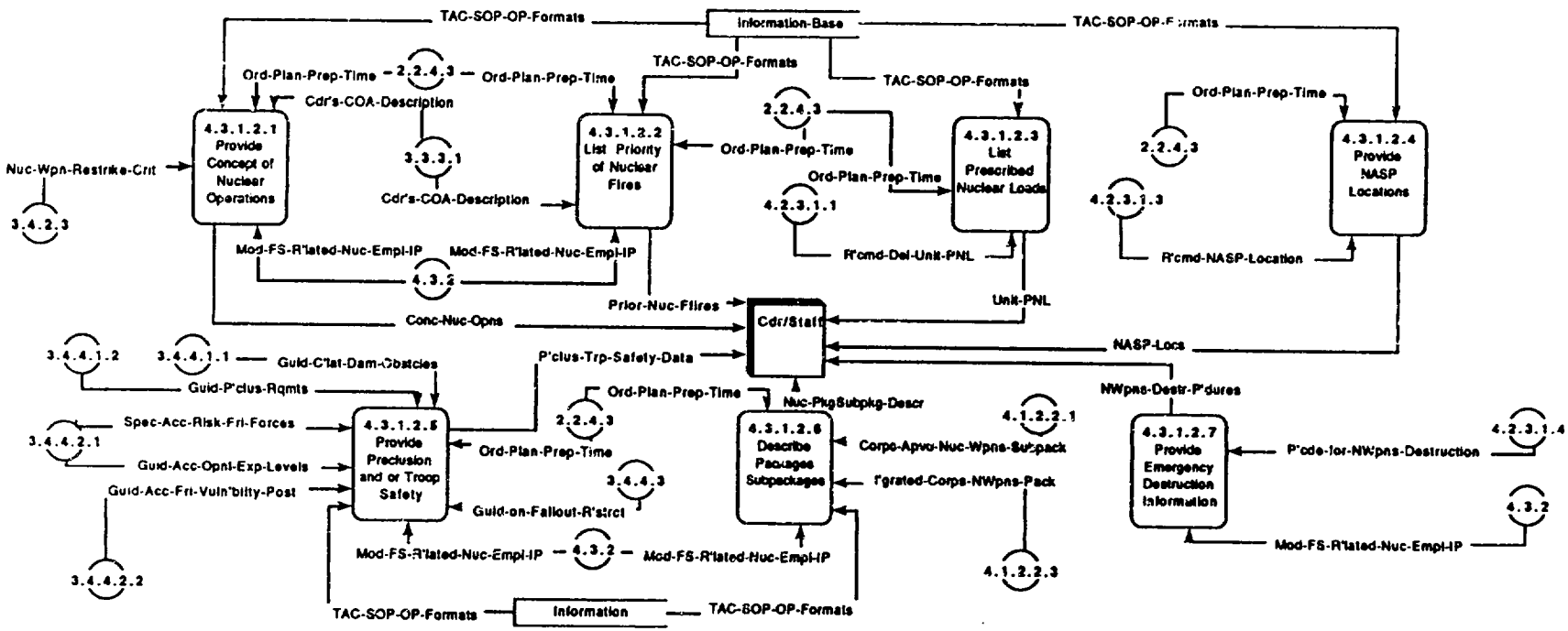
Publish Order/Plan #4.3



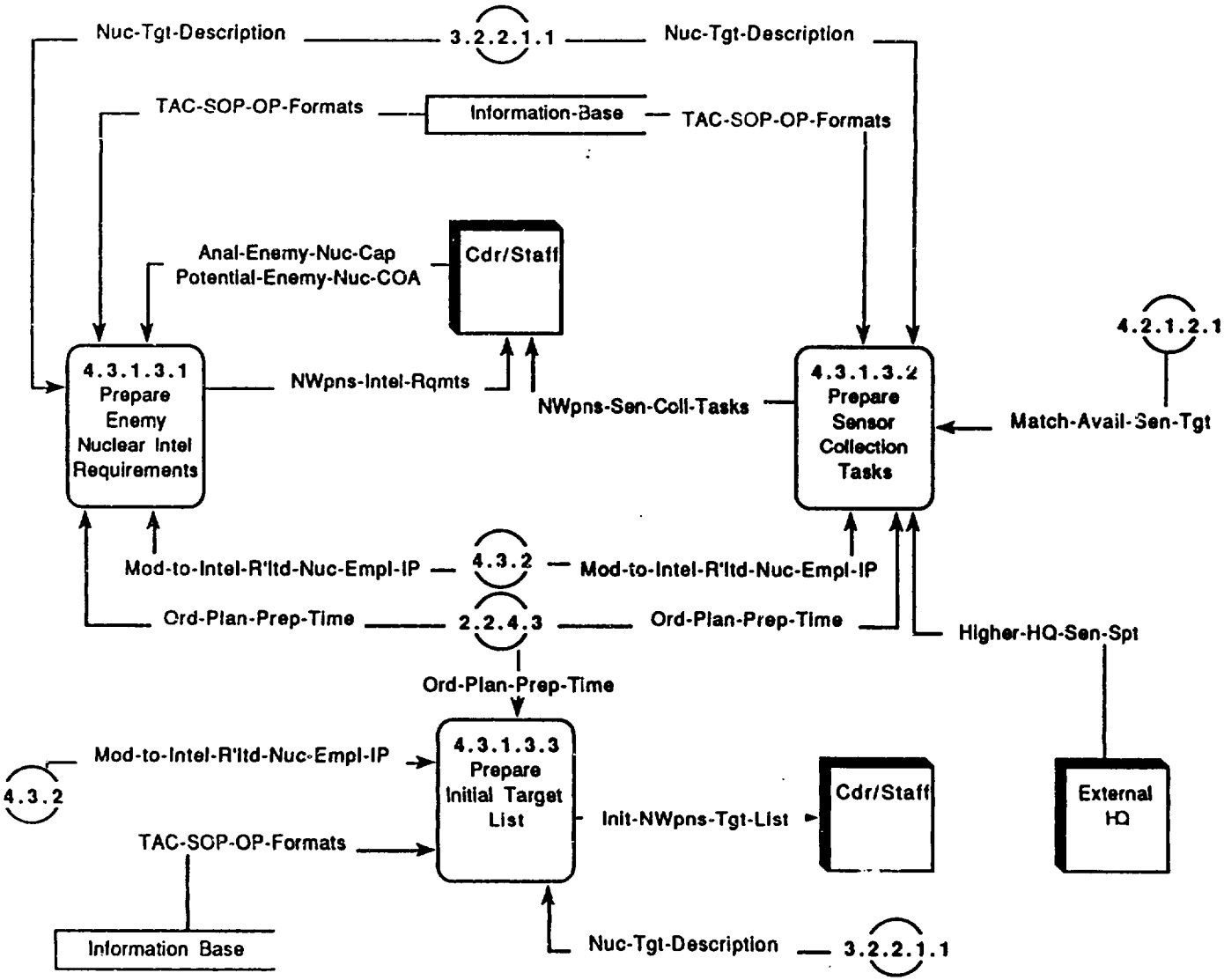
Prepare Order/Plan Inputs #4.3.1



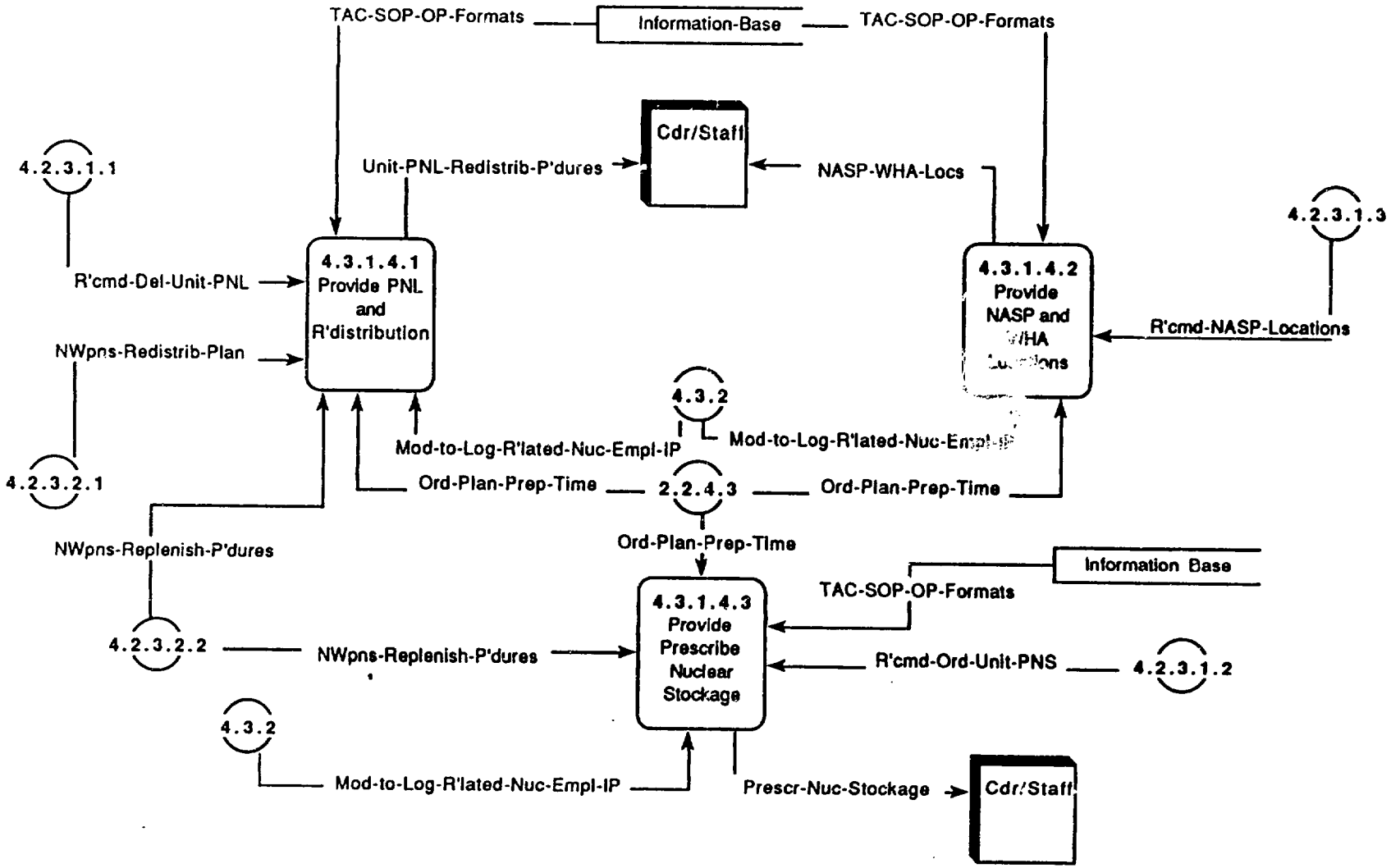
Prepare Input to Body of Directive #4.3.1.1



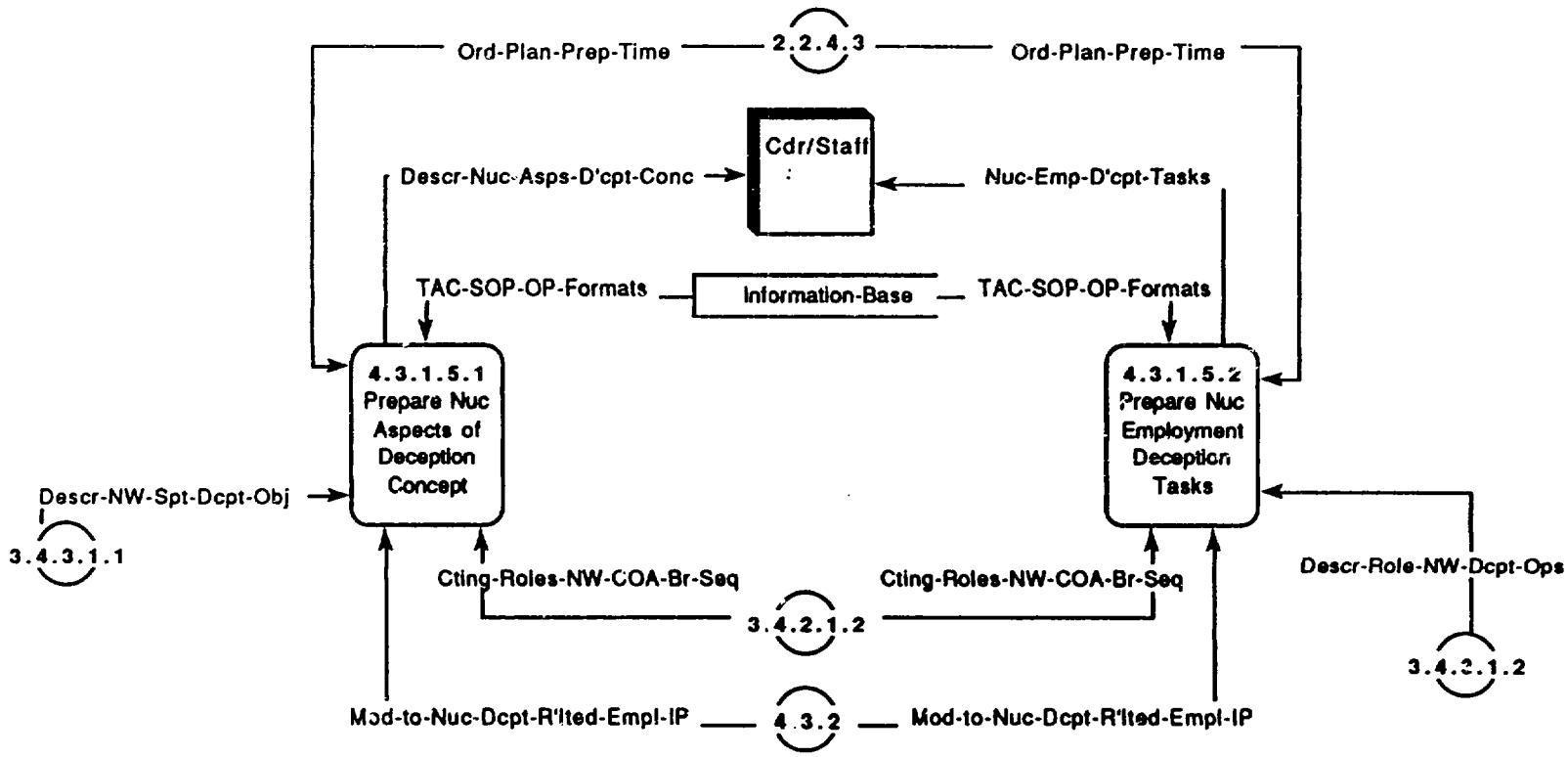
Prepare Fire Support Annex Input #4.3.1.2



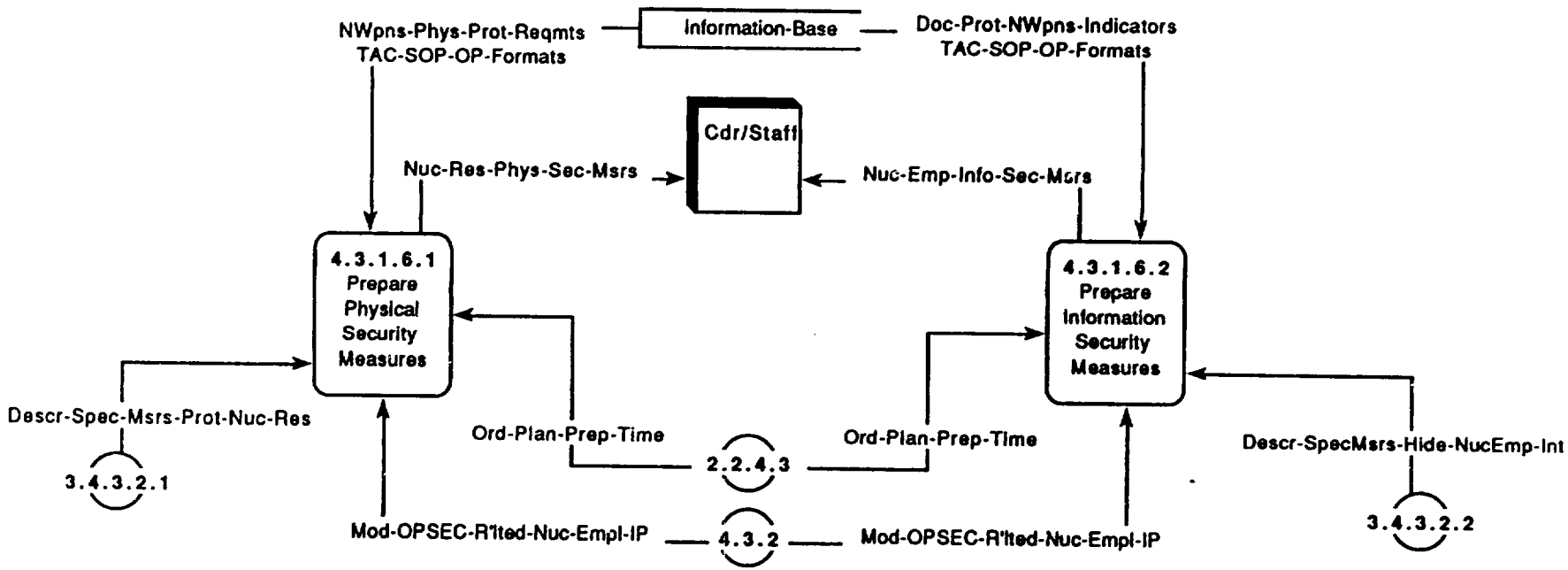
Prepare Intellignce Annex Input #4.3.1.3



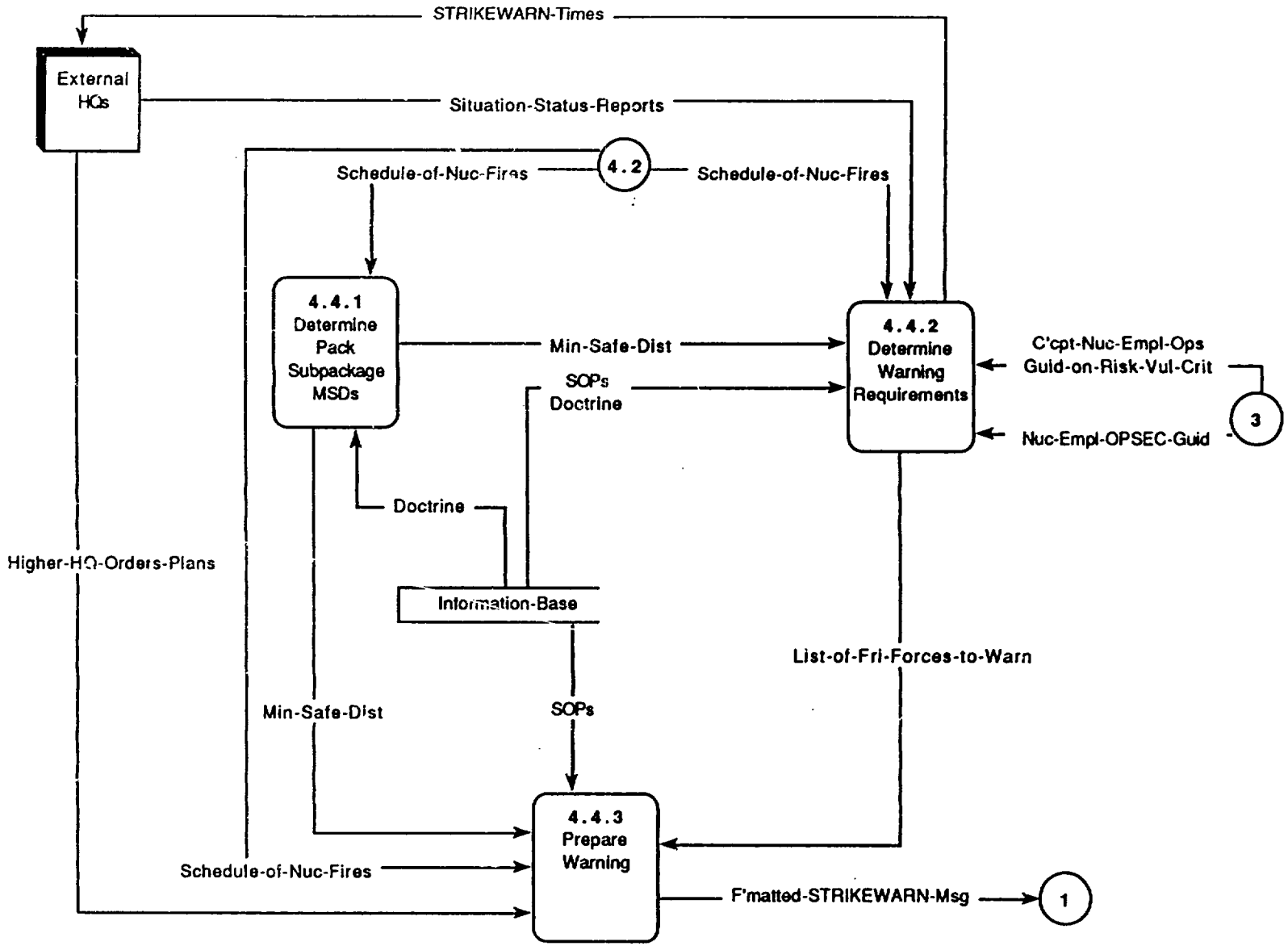
Prepare Input to Logistics Directives #4.3.1.4



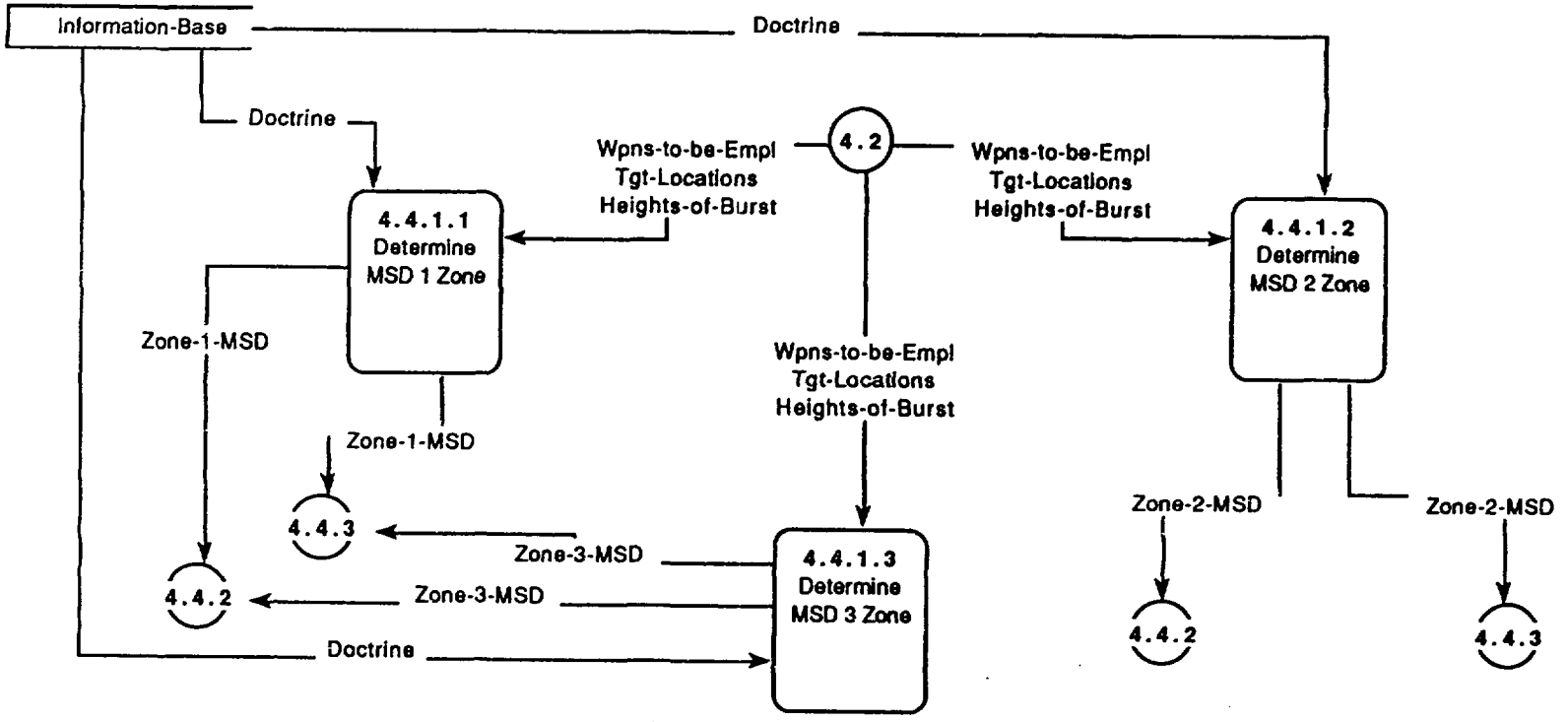
Prepare Deception Annex Input #4.3.1.5



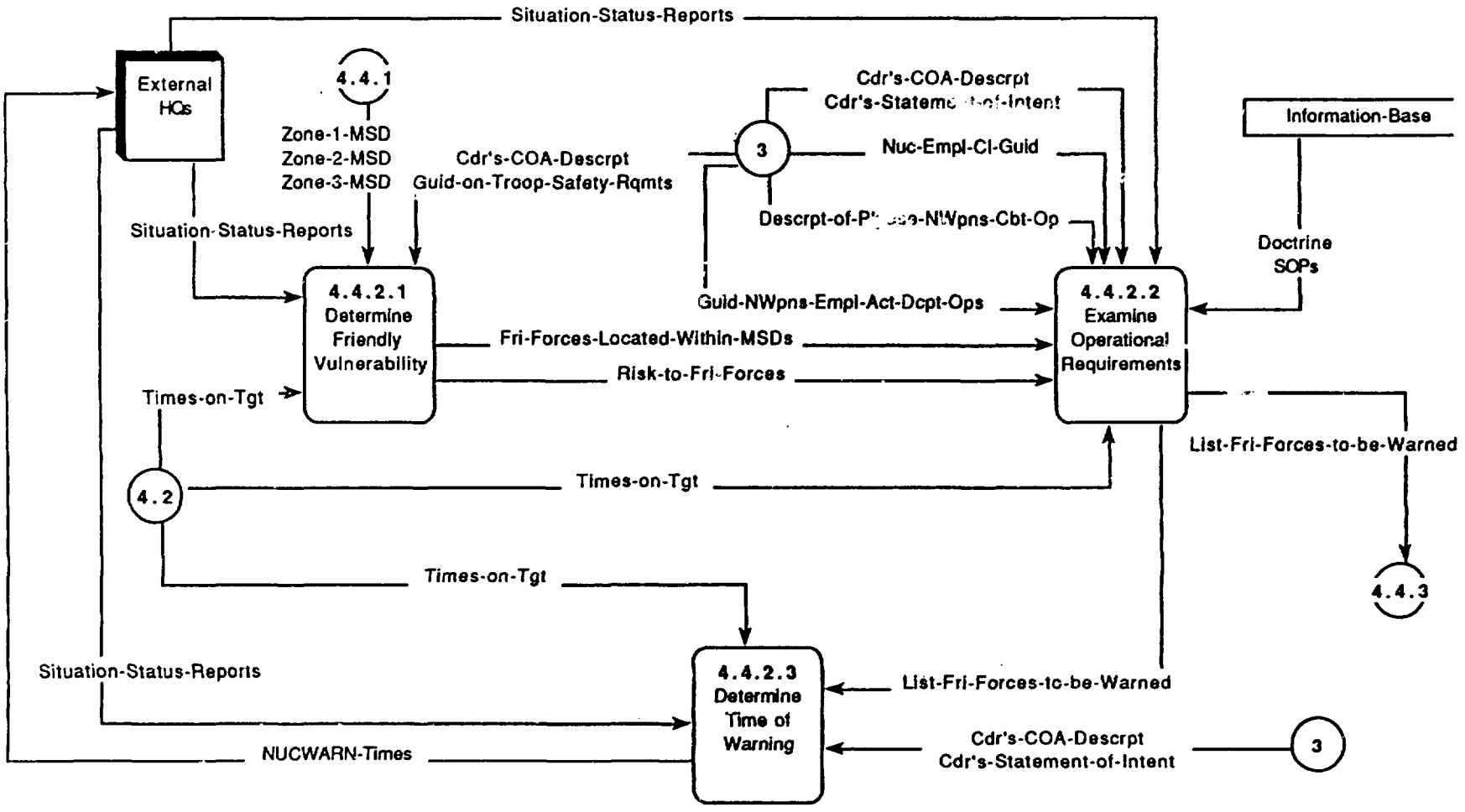
Prepare Operations Security Annex Input #4.3.1.6



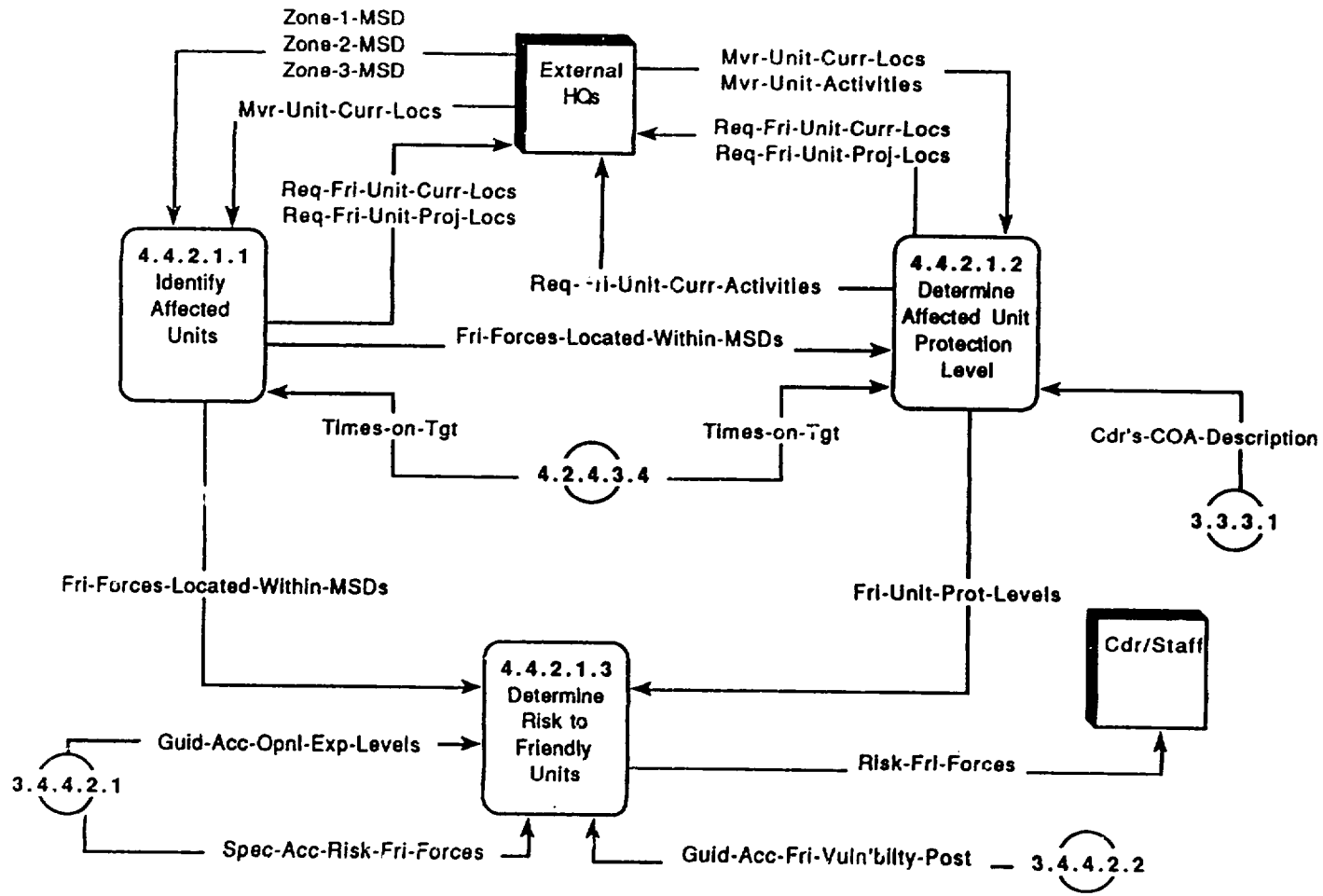
Develop Nuclear Strike Warning #4.4



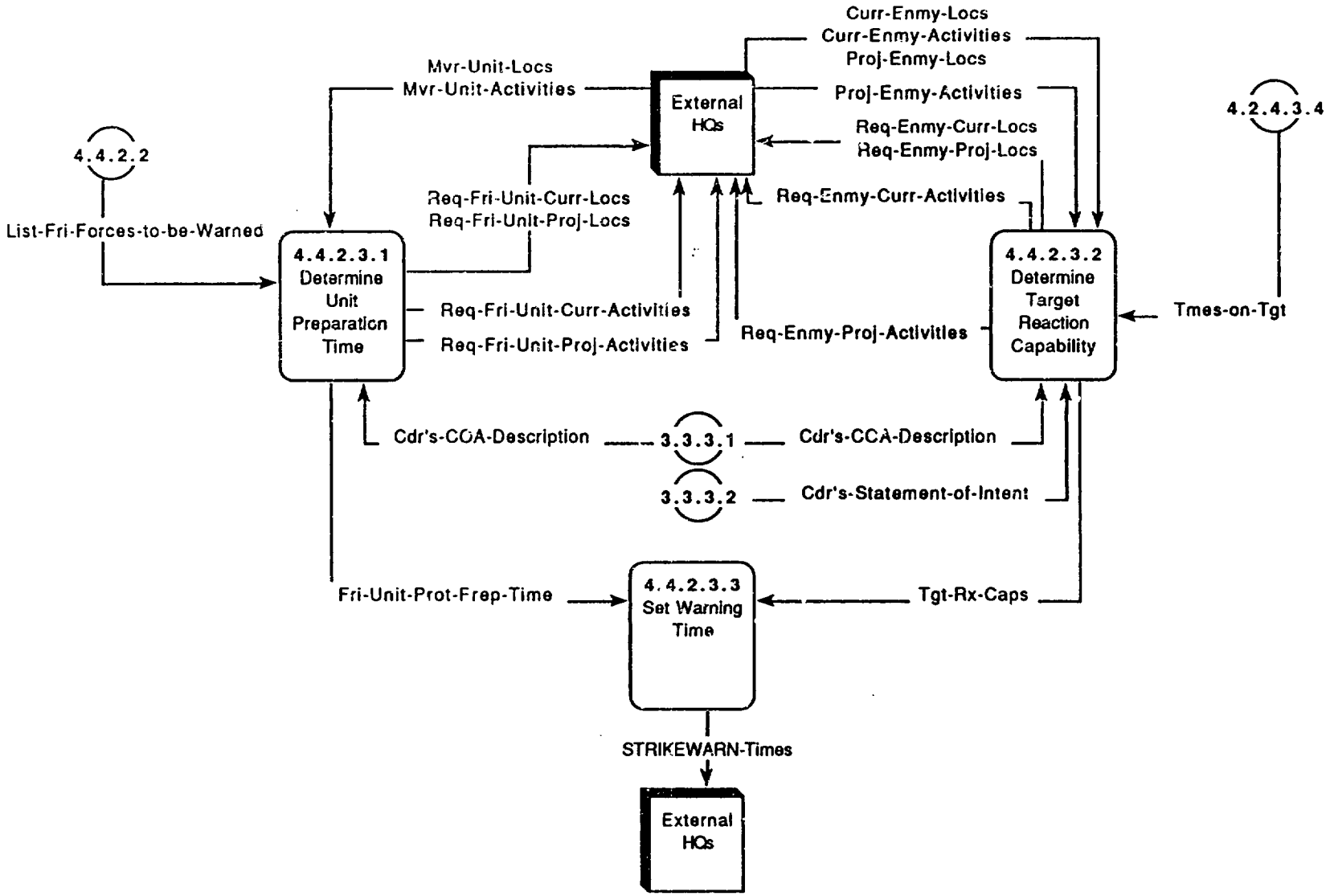
Determine Pack Subpackage MSDs #4.4.1



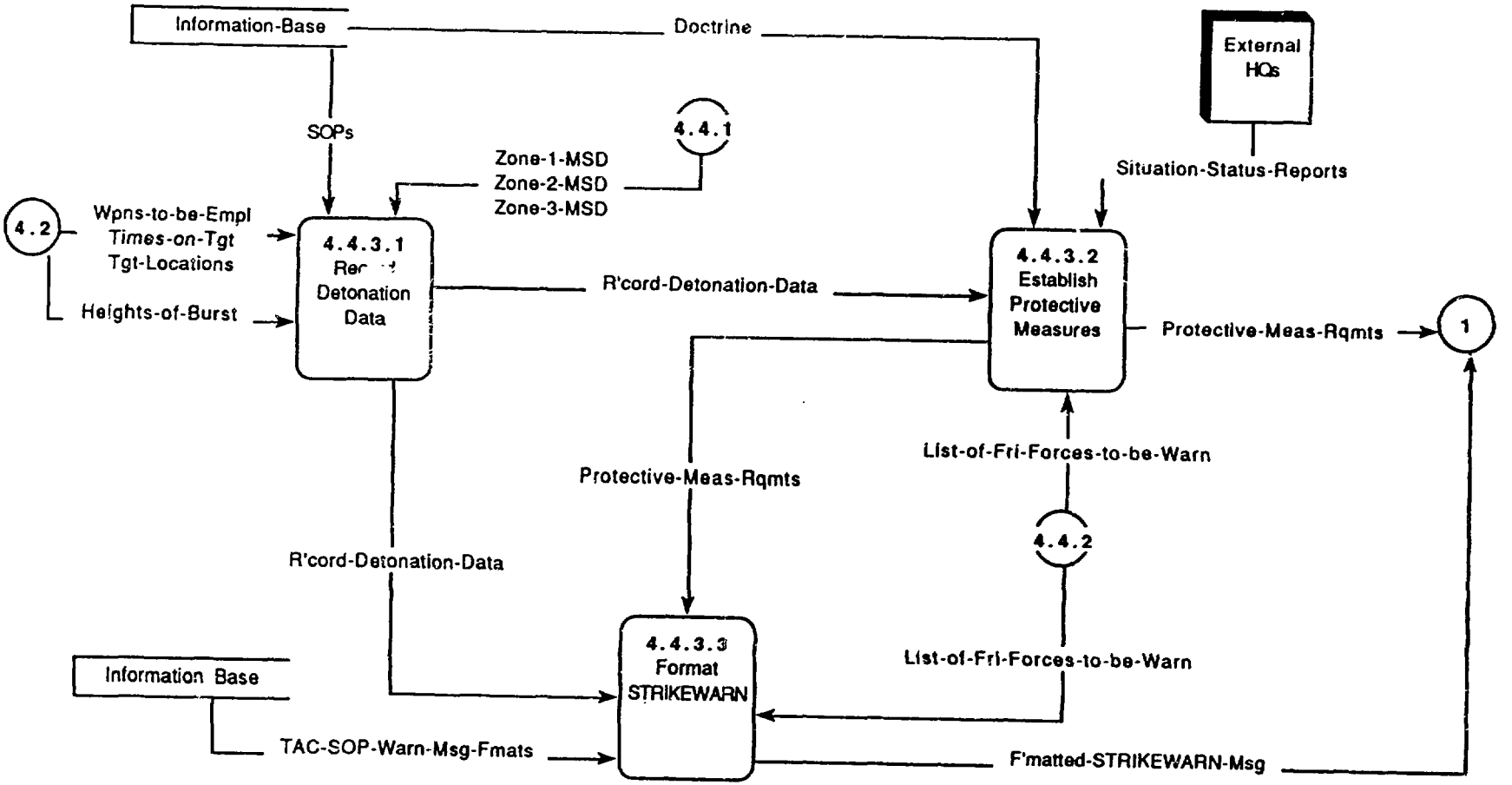
Determine Warning Requirements #4.4.2



Determine Friendly Vulnerability #4.4.2.1



Determine Time of Warning #4.4.2.3



Prepare Warning #4.4.3

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TRC

15 April 1997

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SUBJECT: Report Distribution Changes

The Defense Special Weapons Agency (Formerly Defense Nuclear Agency) has reviewed the following reports under FOIA actions:

DNA-TR-90-33-V1, AD-B150535
DNA-TR-90-33-V2, AD-B150536
DNA-TR-90-33-V3, AD-B150824
DNA-TR-90-33-V4, AD-B150825

Under FOIA action, these reports are approved for **public release**. Distribution statement **"A"** now applies.

Ardith Jarrett

ARDITH JARRETT
Chief, Technical Resource Center